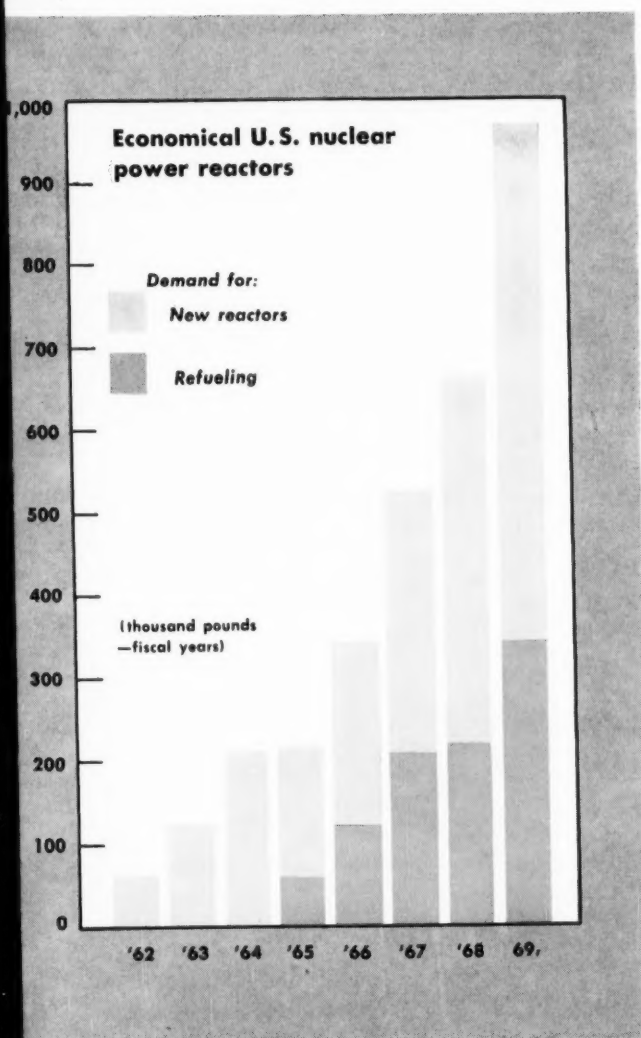


Chemical Week



Broader government controls on industrial prices may be in the cards p. 21

Uranium dioxide surge coming. U.S., European reactors will demand supply . . p. 30

Urea process package offered by experienced trio—Pechiney, Foster Wheeler, Grace . p. 39

Plan to speed product launching—secret is rigid scheduling from lab to marketplace p. 47

Looking for expansion funds? Here's how to approach the financial community . . p. 75

March 28, 1959

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Photo courtesy Capitol Records, Inc., Hollywood, Calif.

Sound Answer to a Record-Making Challenge

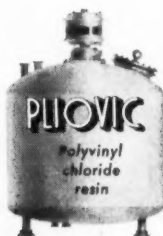
The rising tide of interest in stereophonic sound has record companies rushing to meet demand. But high-speed pressing of stereo presents a real challenge for the record maker.

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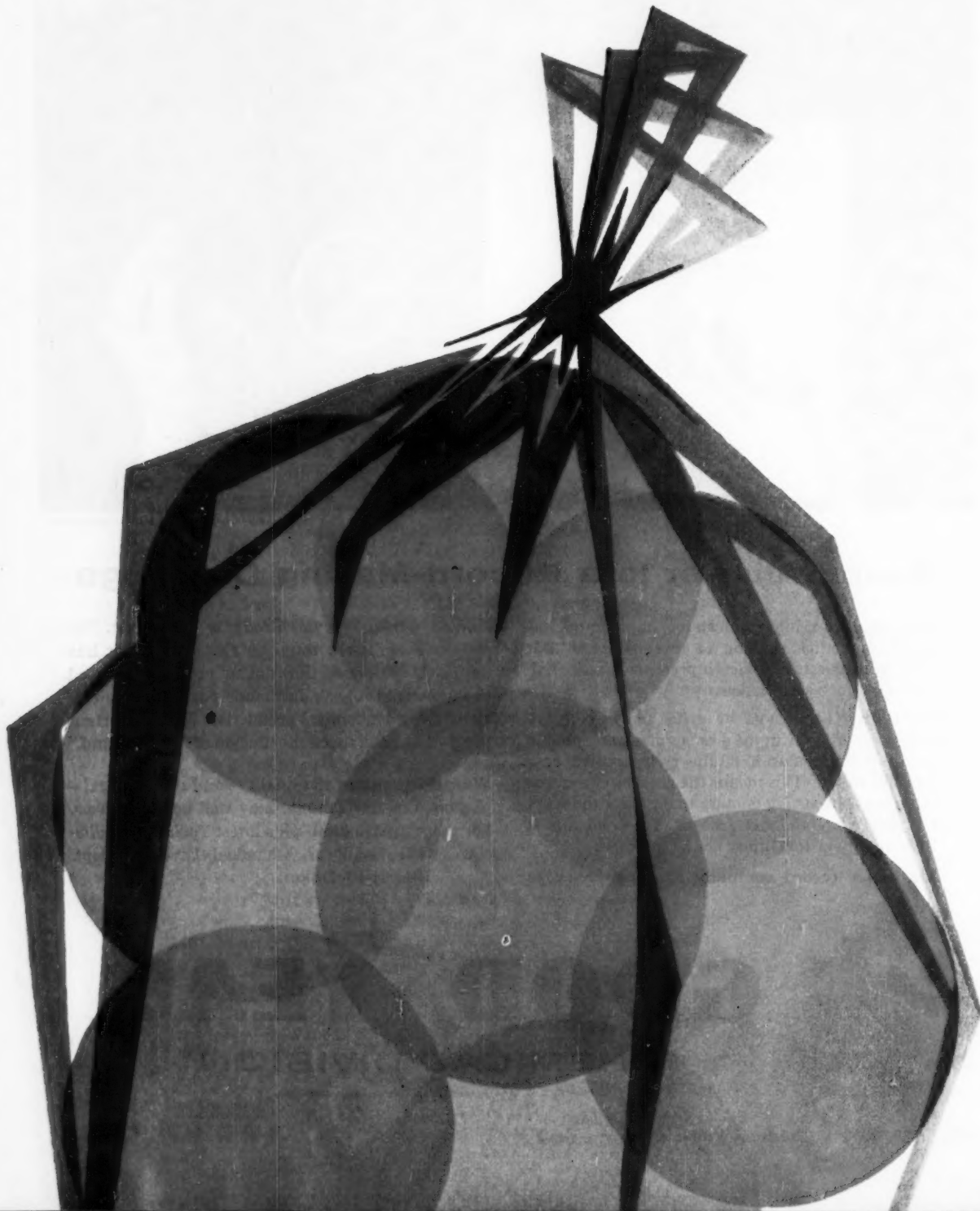
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TOP OF THE WEEK

MARCH 28, 1959

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- ▶ **Automation is spotlighted at Homestake's new uranium ore plant.** Here are some of its novel production ideasp. 57
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Here's Why "Big Three" For its New Fort

A leading oxygen producer in the Southwest, Big Three, considered very carefully its choice of an engineering firm to design and provide the equipment for a new tonnage plant for the Dallas—Fort Worth area.

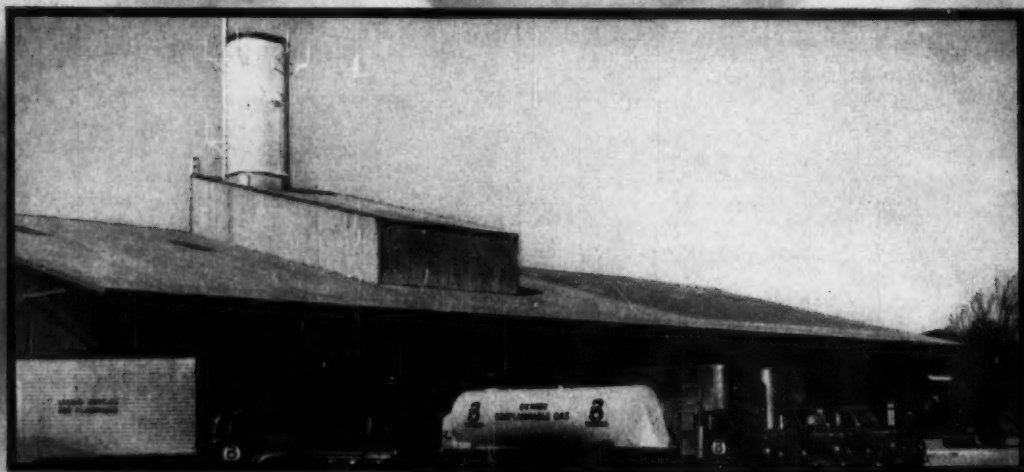
That's why they selected Messer for the job!

Messer's long background in this country and abroad has established its reputation as a sound and reliable supplier of

air separation plants of all types. In the past two years, Messer has been particularly successful in designing and engineering oxygen-producing equipment of the type Big Three wanted.

HOW IT WORKED OUT

Now that the Messer plant is "on stream" in Fort Worth, what are the results? To quote Mr. C. K. Rickel, Big Three president:



EXCEEDS CAPACITY—Big Three plant at Fort Worth runs above capacity whenever necessary; works efficiently and economically.

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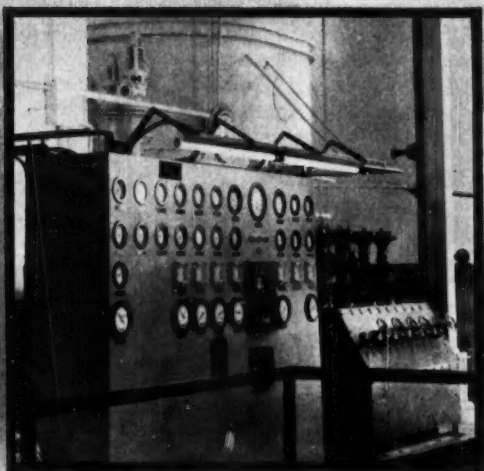
"We are more than pleased with the Messer unit that we installed last summer. It is making its full capacity of oxygen, nitrogen, and argon very efficiently. I would be happy, indeed proud, to show anyone through this plant."

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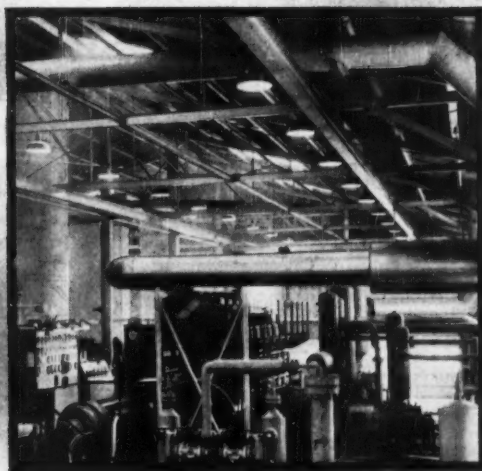
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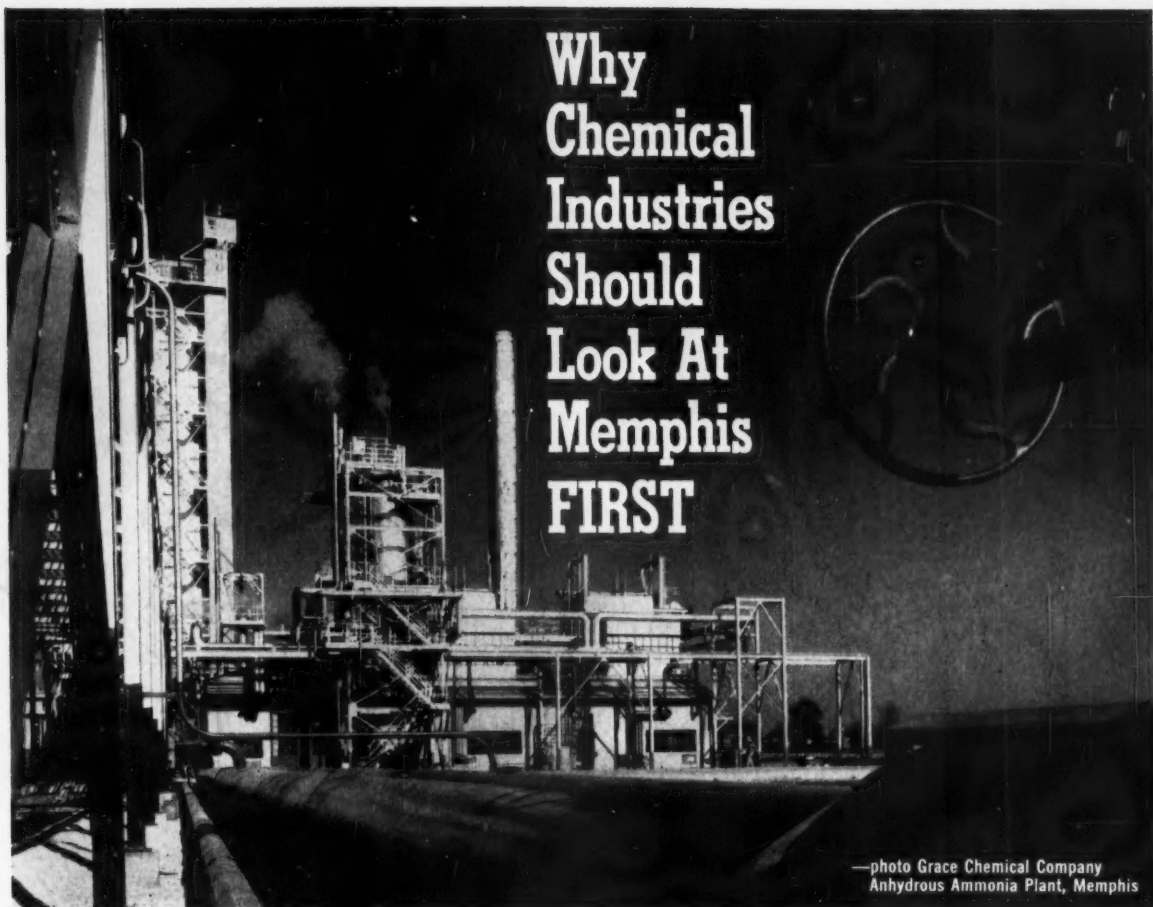
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Site-Seeking Chemical Industries Will Consider These Facts Important

STRATEGIC LOCATION—The South, the area in which Memphis on the Mississippi is centered, produces half of America's minerals. Tennessee ranks sixth in the nation as a chemical producer. Too, Memphis is located near markets for chemical products.

INDUSTRIAL ZONING—More than 12,000 acres of planned industrial sites are available. Ample water frontage for industry is available on still-water harbor of the Mississippi River.

ARTESIAN WATER—Memphis' water is a soft bicarbonate water, low in sulfates and chlorides, and contains no organic matter. This water readily lends itself to the production of high-quality water for industrial use and has no taste nor odor. Water well temperature at 500 feet is approximately 65° F.

WASTE DISPOSAL—The location of available plant

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-VIEWPOINT

GOVERNMENT price supervision in peacetime—is it on the way? This possibility is explored in the story on page 21. And the distressing point is that one of the traditional bulwarks of sound economic theory and action—the Federal Reserve Board—now feels that the large corporation may have too much economic power for the country's good. As a result, the FBR feels that its controls over the money supply are not effective enough to control inflation and deflation.

What does this mean in the chemical industry? Right now, not too much. The immediate target of the FRB is the automotive and steel industries. FRB's economic advisor put it this way:

"Some wages and prices were raised or kept up too high in '57 and thus choked off demands. Moreover, they have not been adjusted downward sufficiently to stimulate demand since then. . . .

"An economic system cannot be expected to operate on the principle that a seller can always obtain any price he wishes to ask for his product. In order to maintain sustainable economic growth, it is the task of the seller to adjust his prices or his product so as to stimulate demand.

Economics Dexter M. Keezer
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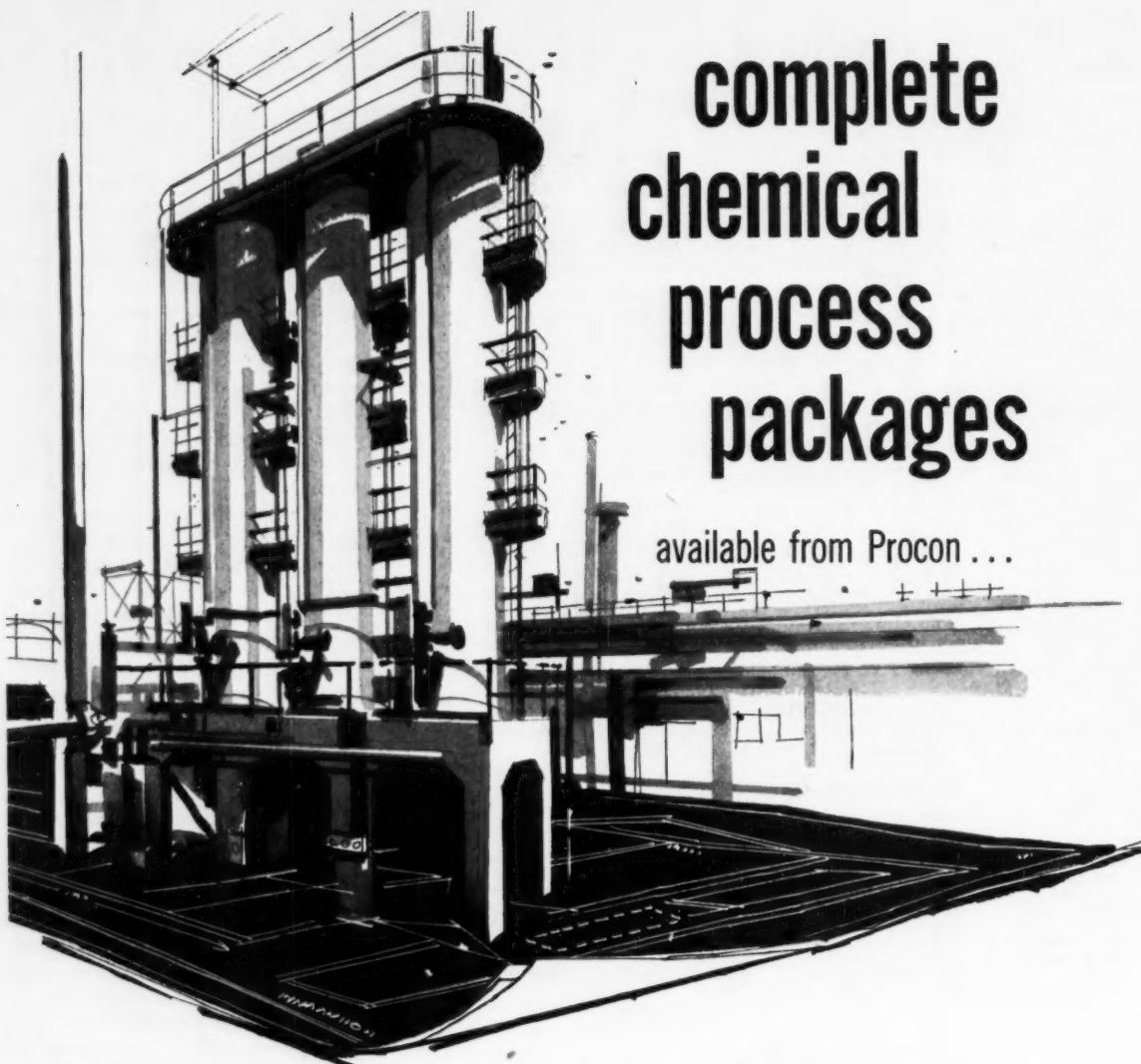
"Much of the unemployment existing today can be attributed to distortions and inflexibilities in the price and income structure. . . .

"The objection to administered prices and wages is . . . that they tend to retard growth and to increase unemployment."

Whether a businessman, generally, has the power to "always obtain any price he wishes to ask for his product" is certainly questionable. We don't believe it's true in the chemical industry. Moreover, our industry has an obligation—to itself, and to its stockholders—to maintain price levels so as to make a return on investment great enough to pay for the research that will lead to the industry's growth.

H. E. Johnson
Editor-in-

Editor-in-Chief



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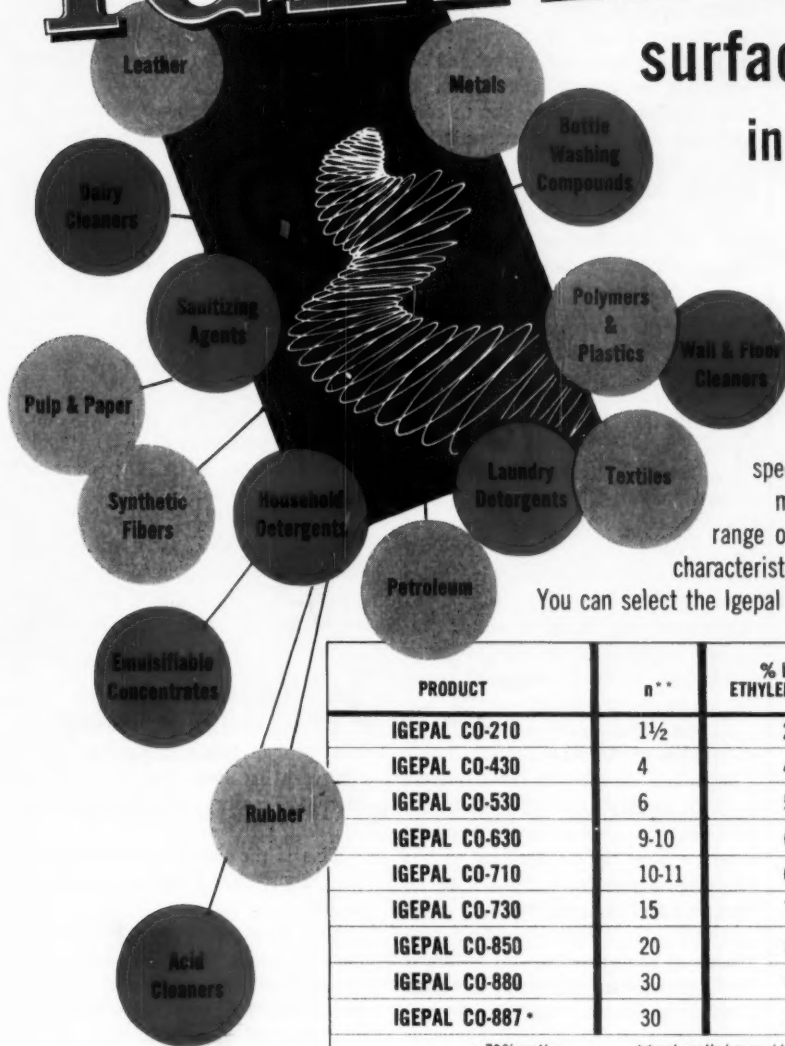
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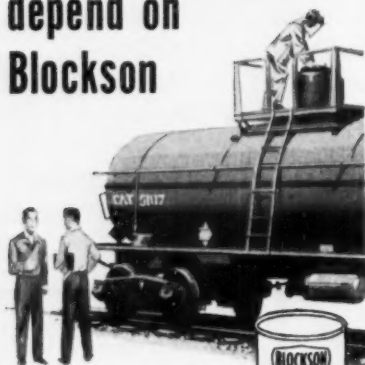
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OPINION

SEC's Viewpoint

TO THE EDITOR: You inquire whether I have any comment, additional information, or a different point of view from that expressed in your Viewpoint (*CW*, Feb. 28, p. 11).

I appreciate very much your sending to me a proof of the page; and on behalf of the commission, I wish to thank you for your expression of confidence in the job the commission has been doing in its efforts to police the securities markets. I regret, however, that the article seems to be based upon the view that the "commission is now taking a negative approach."

The problem discussed in your article is not new. The commission's opinion in the Arvida case and remarks I made in the speech to which you have adverted were necessary to focus attention on the statute's requirements, which have been in effect since 1933. Whatever the reasons, the commission had noted an increasing use of techniques and procedures that seemed designed to start, or have had the appearance of initiating, sales campaigns for securities subject to registration prior to the time the prescribed information was filed with the commission in the manner and under the sanctions prescribed by the act.

As the commission pointed out in its opinion in the Arvida case, it was a deliberate decision of the Congress in 1933, reaffirmed in 1954, that sales activities should not be commenced except against the background of the information deemed necessary to an informed and independent investment appraisal by dealers and their customers. It may interest you to know that this matter received attention from the press very early in the administration of the statutes. I enclose for your information a copy of material that appeared in *The Wall Street Journal* of Jan. 28, 1935, as a result of an inquiry similar to yours made by the *Journal*. You will note that the then general counsel of the commission made clear, as I have attempted to explain in several speeches, that the statutory prohibitions relate only to activities concerned with or affecting the public distribution of securities. The commission has not attempted, and in fact would not have any authority under the securities act, to restrict the activities of corporate of-

ficials in providing information not relating to an offer or sale of a security.

I trust that this letter will serve to obviate any misunderstanding of the commission's purposes. If I can be of any further assistance, please call upon me.

EDWARD N. GADSBY

Chairman

Securities & Exchange Commission
Washington, D.C.

CW thanks Commissioner Gadsby for his exposition of the SEC's position on this subject.

The 1935 article quotes the SEC general counsel, in part, as follows:

"It is my opinion that the Securities Exchange Act imposes no liability upon corporate officials of corporations for statements to the press as to the business and affairs of their corporations; and their responsibilities in regard to such statements are not affected by the act."

For the benefit of interested readers, we have reproduced the full text of the article supplied by Commissioner Gadsby. If you'd like a copy, write us.—ED.

Sum-Up on Steroids

TO THE EDITOR: I would like to congratulate Norman Applezweig on the very excellent article, "The Big Steroid Treasure Hunt" (*CW*, Jan. 31, p. 37).

This is the clearest and most concise report that I have seen on the subject.

The flowsheet titled "Which Production Route for What Producer?" is extremely pertinent and again is presented in a very lucid fashion.

I can well appreciate the fact that many months were required to condense the voluminous literature on the subject of steroids into the easy reading report that appeared in *CHEMICAL WEEK*.

CHARLES J. KERN

Vice-President

Wyeth Laboratories
Philadelphia

TO THE EDITOR: I read with great pleasure your report on steroids. I wish to congratulate you on the really skillful way you succeed in making a large mass of readers ac-

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Sodium formate cuts buffering costs by 50%

Helping the chemical process industries achieve economies of operation is a basic Heyden Newport program. Take the textile and dyestuff field for instance. Here sodium formate supplied by Heyden Chemical Division is helping to reduce drastically the cost of dyestuff production.

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tri-valent chromium ions, increasing their usefulness to the manufacturing chemist.

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OPINION

quainted with subjects which, no doubt, are difficult, sharp and often controversial. . . .

ATTILIO I. SEGRE
Farmitalia
Milan, Italy

TO THE EDITOR: As one who is intimately involved in the big story of the steroids (handling public relations for Schering Corp.), I extend my congratulations on the very comprehensive job you did on "The Big Steroid Treasure Hunt." This article pulls together a lot of far-straying ends into a neat, informative package. A very good job on a subject that is changing daily.

WAYNE PENNINGTON
Edward Gottlieb & Associates, Ltd.
New York

TO THE EDITOR: The report on steroids leaves me awe-stricken at the amount of work, discrimination and knowledge expressed. . . .

DR. DOUGLAS MACFAYDEN
Professor of Biological Chemistry
University of Illinois
College of Medicine
Chicago

MEETINGS

Chemurgic Council, 24th annual conference, Congress Hotel, Chicago, April 1-3.

Fifth Nuclear Congress, Public Auditorium, Cleveland, April 5-10.

American Chemical Society, national meeting, Boston, April 5-10.

Chemical Institute of Canada, Analytical Chemistry Division, eighth regional conference, symposium on instrumental methods of analysis, Guildwood Inn, Sarnia, Ont., Canada, April 6-7.

Instrument Society of America, second national symposium on chemical and petroleum instrumentation, St. Louis, Mo., April 6-7.

Metallurgical Society of the American Institute of Mining, Metallurgical and Petroleum Engineers, 42nd conference of the National Open Hearth Steel Committee, Sheraton-Jefferson Hotel, St. Louis, Mo., April 6-8.

American Institute of Chemical Engineers, annual one-day joint symposium of the Ohio, Pittsburgh and northern West Virginia sections; subject: catalysis; Mellon Institute, Pittsburgh, April 10.

American Management Assn., 28th national packaging exposition and conference, International Amphitheatre, Chicago, April 13-17.

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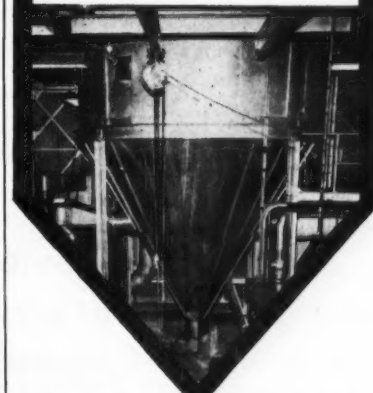
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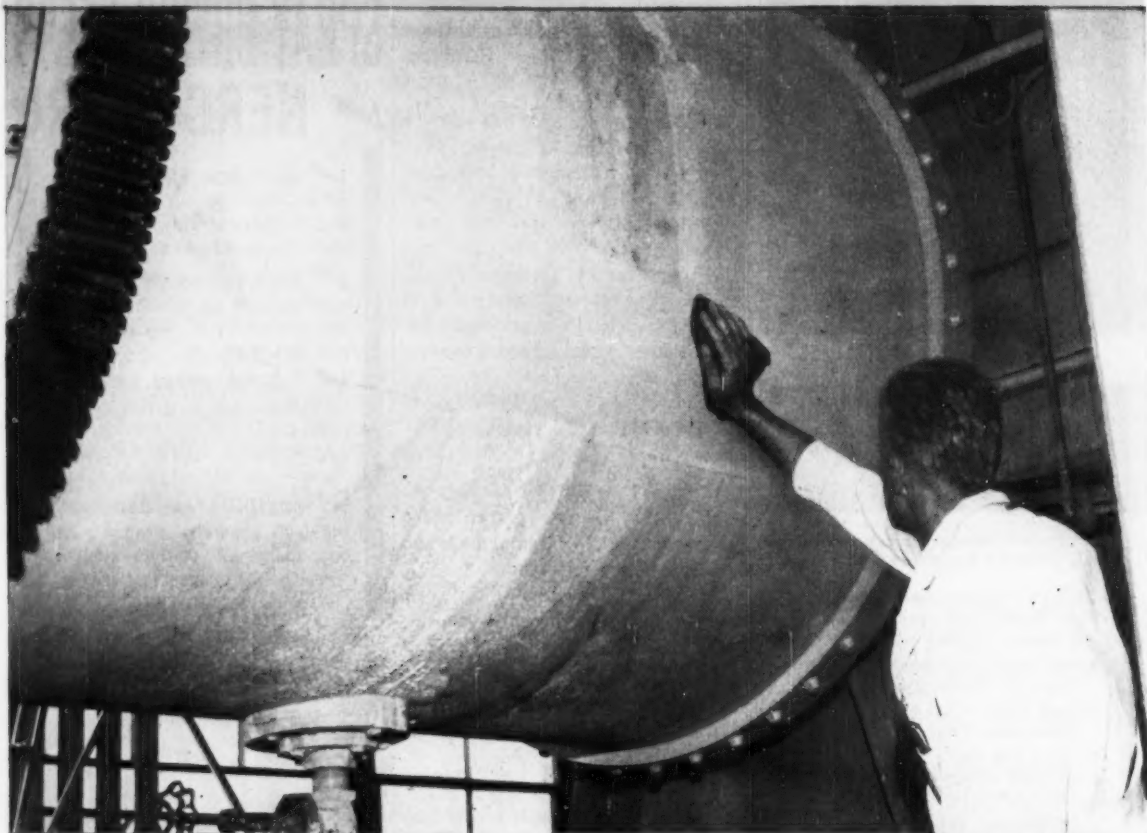


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Business Newsletter

CHEMICAL WEEK

March 28, 1959

Two more drugmakers are stressing interest in chemicals.

- Rexall Drug plans to change its name to Rexall Drug and Chemical Co. because, says President Justin Dart, the new name "accurately points up the direction in which (Rexall) is growing." This year, the company's Chemo-Plastic Division plans to double production of polystyrene, put more emphasis on production of plastic pipe, valves and fittings.

Dart also reported a significant boost in '58 earnings. Sales hit \$182.4 million, up 8.8%. Profits were \$6.3 million, up 27%.

- Cutter Laboratories (Berkeley, Calif.) is acquiring Olympic Plastics Co., Inc., Olympic Containers Inc. (Los Angeles). The companies make molded glass-fiber products, plastic squeeze bottles and rigid blown containers.

- And Merck and Miles Laboratories, already well into the chemical business, will be boosting chemical output. Merck spent \$12 million in '58 on expansion and modernization of chemical plants, tabbed in the company's annual report as "an unusually high" amount. Miles is blueprinting a new plant to put former "captive" output of citric acid on a commercial scale.

- Pfizer, in its just-released annual report, reveals that chemical sales again topped those of the previous year, both in unit and dollar volume. It singles out citric and itaconic acids as particularly big gainers.

Divergent profit trends in other CPI sectors are highlighted by latest reports:

For chemical producers, the trend line is broken, but points up.

Hooker Chemical Corp., for example, scored a 26.5% gain in first-quarter (Feb. 28) earnings, compared with the '58 period. Sales were up 20%, to \$35 million.

And American-Marietta's first-quarter (also Feb. 28) sales were up 29%, to \$58.5 million, over first-quarter '58, while profits hit \$3.2 million, a hefty 49% gain.

Freeport Sulphur was able to push net earnings up a notch—from \$12.97 million to \$13.1 million—even though '58 sales slipped 12.5%, to \$55.3 million. Nonrecurring income of \$67 million from sales of Freeport's Lake Washington, La., oil field went directly into retained earnings.

Food Machinery and Chemical's '58 sales were up 3%, to \$323.2 million; profits up 4%, to \$16.5 million. Chemical sales were 42% of the total.

Business Newsletter

(Continued)

Witco Chemical ended its first year as a publicly owned corporation with a 12.7% gain in net operating revenue, which hit \$1.6 million. Sales slipped from \$40.4 million to \$39.9 million.

Heyden Newport reports fourth-quarter earnings higher than those in the '57 period, after a sharp earnings drop during the recession. In all of '58, sales dropped only slightly, from \$48.5 million to \$47.9 million; but profits plunged 35%, to \$1.7 million.

Diamond Alkali's '58 sales, although the third best in the company's history, dipped 7% from '57, to \$114.2 million. And net earnings were down 8%, to \$6.5 million.

Industrial Rayon is emerging from the recession wringer with a net loss of \$3.1 million in '58, compared with a '57 profit of \$1.2 million. Sales in '58 were down 17.5% to \$47.8 million. For the first two months of this year, however, the profit column is back in the black.

On the metals industry '58 scoreboard: American Smelting and Refining, sales down 16%, to \$417.1 million; profits down 38%, to \$17.3 million. . . . Kaiser Aluminum & Chemical, sales up 4%, to \$408.6 million; profits down 5.9%, to \$25.2 million. . . . Kennecott Copper, sales down 15.5%, to \$395.4 million; earnings down 24.2%, to \$60.1 million. . . . International Nickel, sales down 25.1%, to \$322 million; profits down 53.9%, to \$39.7 million. . . . Metal Hydrides, sales up from \$264,541 to \$3.3 million; profits up to \$214,757 from a '57 loss of \$329,583.

Construction Company returns also bear recession scars. Merritt-Chapman & Scott revenue was up 7.8%, to \$382.1 million, but profits slipped 22%, to \$10.2 million. Chemical and metallurgical operations suffered the most. . . . Vitro Corp.'s revenue was up 3.6%, to \$65.5 million; profits down 66.7%, to \$500,293. . . . Blaw Knox revenue was down 8%, to \$167.7 million; profits slipped a hair, from \$7 million to \$6.9 million. . . . In the quarter ending Jan. 31, Fluor Corp. net sales were \$28.9 million, down from \$30.6 million a year ago; profits plunged to a bare \$30,463, compared with \$373,880 earned in the '58 quarter.

General Electric is selling the molded plastics business that it started back in 1931. Prospective buyer: Haveg Industries (Wilmington, Del.), fabricator of engineered plastics for industrial and space-program applications. The sale—conditional on Haveg's negotiating a labor contract with the United Electrical Workers Union—will include the GE plant at Taunton, Mass.; and the business and much of the equipment of the GE plant at Decatur, Ill. But this deal will not affect GE's other operations (e.g., production of silicones, polycarbonates and laminated plastics) in the plastics field.

In the case of inventor Jerome Spevack vs. AEC (*CW*, March 14, p. 26), the U.S. Supreme Court this week decided not to establish a principle. The justices are continuing in effect the district court's order forbidding AEC to disclose Spevack's heavy-water production process pending issue of a U.S. patent expected sometime after May 25.

BRIEFS

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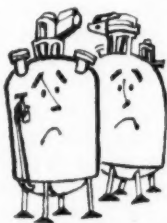
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A lot can go wrong when the muriatic acid you use isn't quite good enough for your process:

Sulfates in muriatic, for example, could gum up your process with an insoluble precipitate when you work with something like benzidine dyes. Or they could cause serious extraction losses if you're refining certain high-grade metals, such as radium.

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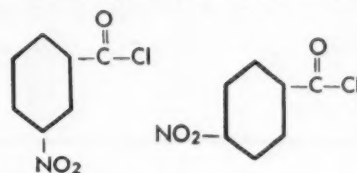
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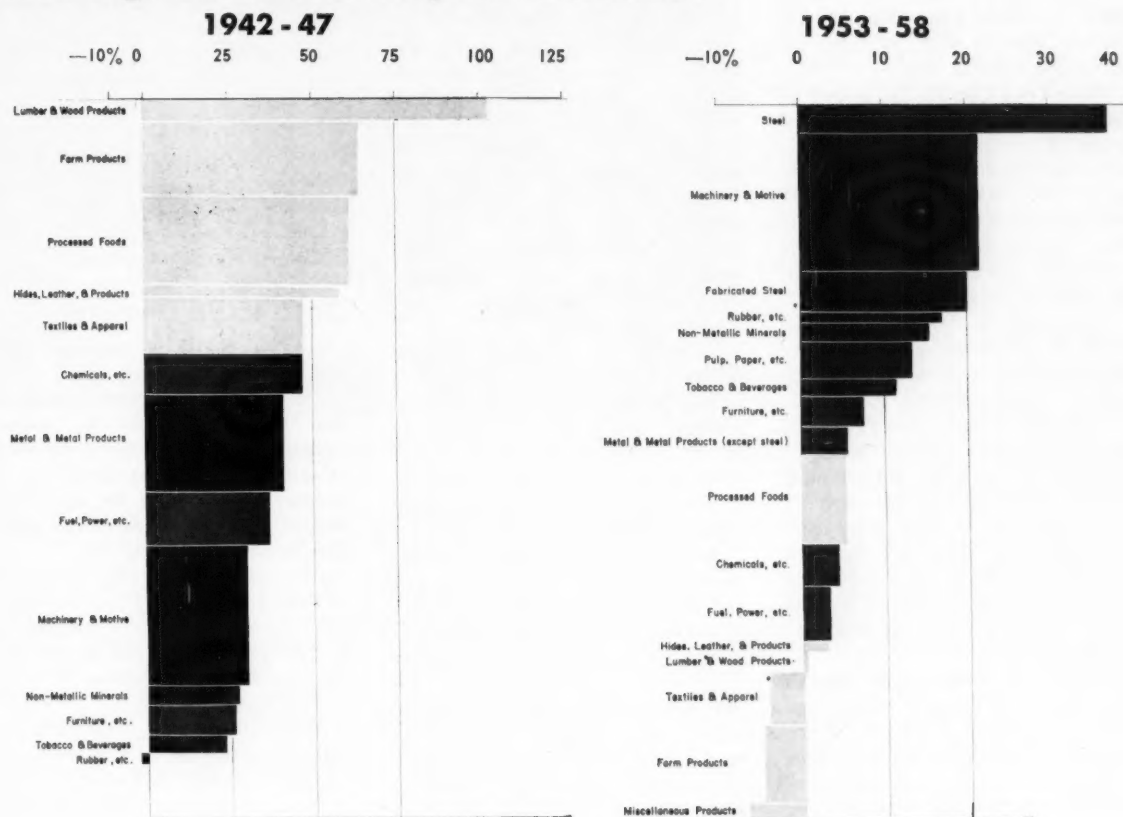
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Administered Prices Under Fire

At Congressional hearings this week, "administered wages" and "administered prices," assailed as twin villains of postwar inflation, are bringing a call for new limitations on management's freedom to set prices. For the chemical industry, despite its clean record in price and wage practices, those proposals could mean sweeping changes in marketing policies of many companies.

The specific proposal being debated this week, introduced by Rep. Henry Reuss (D., Wis.), would merely authorize the government to investigate wage or price increases that appear to threaten economic stability. But more sweeping actions also are being considered. Example: a scheme to require all large corporations to give

advance notice to the Federal Trade Commission on proposed price rises (see *CW Washington Newsletter*, March 7).

Severest critics put chemical companies into a "gray zone" on their "administered-price" scale. They cite figures showing that the wholesale-price index for chemicals and allied products was rising steadily throughout the recent recession. But industry men retort that the rise was only 1.1%; and since then, chemical prices have lost much of their 1957-58 gains. And over the past six years, while chemical production climbed by more than 30.6%, the chemical-price index mounted by less than 4.2%.

Supply-Demand Immunity: In certain industries, according to the ad-

ministered-price theory, management has power to set prices almost arbitrarily. Such prices, it's asserted, are relatively inflexible and not subject to usual market pressure; they tend to stay up even when demand drops sharply.

Broader adoption of this view has far-reaching implications. And a series of recent actions indicates there is a measurable swing toward this thinking:

- The Federal Reserve Board testified that administered prices are a reality of modern business. FRB said it does not have the power to curb inflation stemming from those phenomena.

- President Eisenhower's top economic expert—Raymond Saulnier—

went along with that testimony and openly accused some allegedly administered-price industries — specifically, autos and steel—of retarding growth and limiting employment.

• Sen. Albert Gore (D., Tenn.) called for direct governmental intervention, controls such as those on utility and railroad rates.

Stable Price Upheld: The notion of price and wage controls is anathema to one CPI spokesman. Koppers President Fred Foy—who has been speaking on this subject on various occasions during the past year—holds that price regulation by the government "... over a period of time would have the effect of wiping out everybody."

Foy objects to the term "administered prices" as ambiguous and having unfavorable connotations. He advocates "creative pricing."

"You have to have a price at which you can operate and stay healthy," he told *CW* last week. He says this isn't always possible, and that even big companies have to meet price cuts eventually. Foy feels that the new criticism from Washington can't possibly be hung on the CPI. Chemical prices, he points out, weakened during the past year.

Pressing for Intervention: But in Washington, the concern of such upper-level agencies as the President's Council of Economic Advisors with administered pricing is spurring "economic liberals" to press for some form of governmental intervention. The subject has been injected firmly into various Congressional and executive agency investigations of inflation and how to control it.

For example, Sen. Estes Kefauver (D., Tenn.)—who has been plugging this theme hard for two years—is laying out a big series of investigations on the topic. Sure to get a look: drug and pharmaceutical prices.

Chemicals—Class by Themselves? A degree of encouragement for the CPI comes from mild-mannered Gardiner Means, one-time New Deal economist and now a partner in a private business concern in Virginia. Appearing before Kefauver's Subcommittee on Antitrust and Monopoly, Means presented charts (p. 21) purportedly illustrating two different types of inflation.

Means says that during World War II, inflation resulted mainly from price hikes by nonadministered price indus-

tries (chart at left, p. 21). But in 1953-58 (chart at right), the exact opposite took effect, with the so-called administered-price industries leading the pack. Chemicals—which he classified as an industry in which prices are set partly by administrative decision, partly by market forces—was among the leaders in raising prices in the 1942-47 period, but was far down the list in the 1950s.

Imports as Price Control: As other economic liberals jumped into the free-for-all, Kefauver warned steelmakers to hold prices down this summer or face legislative action. And economist John Kenneth Galbraith called for more immediate direct government intervention.

Attention also was focused on other possible means of controlling prices. It was pointed out that in the government's new program to control oil imports, Eisenhower has threatened to let more foreign oil enter the U.S. if domestic producers boost prices without justification.

At present, the chances of getting more direct price curbs enacted into law are definitely dim. But if inflation makes more headway this summer and unemployment continues in the neighborhood of 5 million, demand for sterner measures will become more insistent. And chemical management men—accustomed to numerous price changes every month—would have to adjust their thinking and operations to a new way of economic life.

More Terylene Time

Imperial Chemical Industries' exclusive grip on British production of Terylene polyester fiber now seems sure to be extended another five years beyond its expiration date, July 13, '59.

British Celanese—subsidiary of ICI's fiber rival, Courtaulds—is expected not to appeal a British Patent Division decision to grant the five-year extension.

The specific patents at stake—British Patents 578,079 and 603,827—are held by Calico Printers' Assn. ICI holds the exclusive rights in England and the rest of the world, excluding the U.S. Calico sold U.S. rights to Du Pont. When the latter's Dacron polyester patents expire in '61, ICI will come into the U.S. market through its joint venture with Celanese

(*CW*, Oct. 25, '58, p. 37).

The British decision does not affect Du Pont's U.S. patent position or ICI's plans for U.S. production. But it considerably brightens ICI's fiber outlook in England, where it is expanding Terylene capacity to 50 million lbs./year, and is building a 30-million-lbs./year plant for terephthalic acid (raw material for polyesters).

The extension was granted on the ground that wartime delays deprived Calico of patent benefits by stalling development. Courtaulds succeeded in getting the extension reduced from the eight years originally requested.

Data to Be Decisive

Another round of hearings ends this week in the stormy court battle in which the Federal Trade Commission is leveling antitrust charges against five producers and distributors of antibiotics. FTC's six-lawyer staff is winding up its side of the case three months ahead of schedule (*CW Business Newsletter*, March 21).

FTC lawyers called only a handful of witnesses—including four top antibiotic scientists—and appeared willing to have the case decided largely on the basis of 700 documents the government has introduced.

Upjohn's board chairman, Donald Gilmore, questioned in detail by commission attorneys, firmly denied he had ever engaged in price-fixing discussions—either before or after Upjohn began buying bulk tetracycline from Bristol-Myers in Sept. '54. He said his company priced its product at the existing market level because "we couldn't raise the (going) price, and it would have been silly to charge less."

Another key government witness, Manuel Rosa, U.S. Patent Office examiner and experienced organic chemical patents attorney, testified that the recognized presence of a substance in a prior-patented invention generally was enough to spike an application for a patent on the pure material. Rosa cited a well-known ruling on citric acid in which the isolator was denied a patent because the substance was present in lemons.

But, Rosa pointed out, there were exceptions to this rule. Adrenalin, present in animal glands, was patentable because of the great utility of the pure form.



CW PHOTO—ALFRED WAGG

NASA's Glennan, Brackett draw up the agency's new buying plans.

NASA: Profits and Pitfalls

This week, the National Aeronautics and Space Administration is pondering four companies' just-opened bids to supply 70,000-250,000 lbs./month of liquid hydrogen. This contract is one of NASA's first for major chemical commodities for projects slated to boost the chemical process industries' stake in missilery. But while the new space agency can be counted on for a large volume of new business, getting the NASA-sponsored contracts may pose new problems for company negotiators.

The agency's director of procurement and contracting, Ernest Brackett, told *CW* that contracting will follow procedures set out by the Armed Services Procurement Regulations. Whenever possible, he said, the agency will tap a military service to buy for it, if that service is already a purchaser of a needed item.

More Red Tape? Industry people queried by *CW*, though basically in agreement with NASA's plans, do have some misgivings. They fear that by farming out its negotiations to the services NASA may further complicate already-complex government procurement regulations—because of the frequent conferences between NASA and the services that will be needed to spell out the agency's specific requirements.

Where precise requirements cannot be defined, NASA will negotiate contracts itself. The bulk of this contracting, says Brackett, will be done on a cost-plus-fixed-fee basis. Others will be let on a fixed-fee basis. All will be subject to renegotiation.

These contracts, said one experienced negotiator, should be simpler to wrap up than those handled by the services. "It's easier," he explained, "for NASA to work out a simple procedure, since it has less personnel and does not have such widely diversified command and responsibility."

Problem on Patents: But industry singles out NASA's patent regulations as probably the most sensitive item to be negotiated in future NASA-sponsored contracts.

Under NASA regulations, a company must give "exclusive rights" to the agency on any inventions or processes developed on government time. This differs from most service contracts, which give the company or inventor all rights—with the exception that the government is permitted to use the invention freely.

One veteran chemical contractor told *CW*: "I know they (NASA) are having trouble on this score already—and it's likely to become a big factor in future negotiations with chemical processors."

Billion-Dollar Market: However, industry men emphasize that the new agency will become a major source of new business for the CPI. Already cracking along at a half-billion-dollar clip and slated to reach the \$1-billion budget level within the next couple of years, NASA has quickly established itself as one of the "big" agencies in Washington.

And, it will get bigger and more influential as the U.S. moves deeper into the space age. According to Administrator T. Keith Glennan, NASA's budget will always stay well under the \$5-billion/year mark, but the agency will exercise a strong hand in the nation's military space program, which will easily be in the multibillion-dollar bracket within the next decade.

Moreover, the fact that CPI firms are definitely in the running was evidenced last week when NASA's Cleveland office opened the four bids from companies vying to supply the liquid hydrogen.

Two Delivery Deals: To procure the hydrogen, NASA offered firms two alternatives: one, that the agency buy a minimum of 70,000 lbs./month, with no fixed maximum; the other, that it buy a maximum of 275,000 lbs./month, with no guaranteed minimum. Companies could bid under either or both conditions.

On the basis of production, Union Carbide's Linde Division said it could supply liquid hydrogen at prices ranging from 66¢ to 49¢/lb. General Dynamics offered \$2.80 to 89¢/lb.; Allied's General Chemical Division, \$5.67 to \$1.24/lb.; Gas Industries, subsidiary of Air Products, \$2.64 to 77¢/lb.

NASA is expected to award the contract by mid-May. Deliveries of liquid hydrogen would start a year from then. The successful company will have to build a new plant at a yet-unchosen site on the West Coast at an estimated cost of \$4-6 million.

As a guide to chemical companies seeking future NASA contracts, Brackett suggests they get on the bidders' mailing list. There are standard forms for doing this at any NASA facility—addresses of which are available at NASA's Washington office (1520 H St., N.W.). Since each NASA laboratory does its own housekeeping procurement, he emphasizes, it is important to be on the bidders' or source list for each laboratory.

COMPANIES

Magnolia Petroleum, Mobil Oil subsidiary that recently decided to put up a 380-million-lbs./year ethylene plant in Texas (*CW*, March 14, p. 25), is setting up a petrochemicals department.

Food Machinery and Chemical Corp. has carried out its proposed acquisition of Sunland Industries, Inc. (Fresno, Calif.), producer of insecticides, fertilizers and seeds, through a stock exchange (*CW*, Feb. 7, p. 25). FMC already operates in the West Coast agricultural chemical market through its Niagara Chemical Division.

Cutter Laboratories will acquire the assets of Olympic Plastics Co. and Olympic Containers, Inc. (Los Angeles), in exchange for an undisclosed amount of Cutter Class A common stock. Olympic Plastics makes engineered injection compression and fiber-glass products. Cutter is also in plastics through its affiliates, Plastron Specialties and Pacific Plastic Products.

Bestwall Gypsum's management has recommended a 2½-for-1 stock split, increasing outstanding shares from 776,302 to 1.9 million. Authorized stock would be upped from 1.5 million to about 3 million shares. The extra stock would be used to continue Bestwall's policy of issuing stock instead of cash dividends.

American Cyanamid is planning to move its offices out of New York City. Preferred location: Alpine, N. J., near Lederle Division's Pearl River plant. Cyanamid has an option on 192 acres there, plans to use a total of about 25, including three for office buildings. First building to go up would house an electronic data-processing unit. Before going ahead, Cyanamid must win approval of the local borough council for a zoning change.

Aluminum Co. of America, spurred by rising aluminum demand, reopened another potline last week — one of the two shut down at its Rockdale, Tex., smelter. Last month, Alcoa reopened another potline at Alcoa, Tenn.

EXPANSION

Gypsum: National Gypsum is expanding its Savannah plant 25%. The project will be completed this summer.

Glass: Owens-Illinois Glass Co. will build a multi-furnace glass container plant in New Orleans. It will occupy 150,000 sq. ft. on a 24-acre site on the Inner Harbor Industrial Canal.

Aluminum: Reynolds Metals will spend \$1 million expanding three plants near Bellwood, Va. As the first step in setting up a drawn tubing operation, some 30,000 sq. ft. will be added to the present 230,000-

sq. ft. extrusion plant. The 150,000-sq. ft. foil plant will be expanded by another 100,000 sq. ft., and an addition to the smelting plant will open the way for producing rods, bars, and shot.

Meanwhile, Reynolds' Massena, N.Y., plant is slated to open on schedule April 1, despite the \$100,000 explosion and fire that ruined the pitch fuel pump house and injured 22 men last fortnight.

Safflower Oil: Pacific Vegetable Oil Corp. (San Francisco) will put up a \$500,000 safflower oil processing plant in Culbertson, Mont., this year. Construction is slated to be completed in October. Capacity: 8,000 bbls./day.

Pulp and Paper: Tennessee River Pulp and Paper Co. plans to start building a \$40-million kraft pulp and container board mill at Counce, Tenn. Capacity will be 500 tons/day. Completion target is Jan. '61.

Resins: Bate Chemical Corp.'s Polyresins Ltd. will substantially increase capacity of its plant in Toronto. It will add acrylic emulsions to its line of polyvinyl acetate and polystyrene emulsions.

FOREIGN


Pharmaceuticals/Japan: Upjohn International and Sumitomo Chemical are setting up a new company capitalized at \$140,000. Ownership is tentatively fixed at 55% for Upjohn and 45% for Sumitomo. The firm will import Upjohn products, including hormones and cortisone, in both packaged form and bulk.

Ethylene Oxide/Italy: Union Carbide is adding another project to its recent European petrochemical ventures: a 26.5-million-lbs./year ethylene oxide plant. It will be adjacent to the abuilding polyethylene plant of Celene, which Carbide owns jointly with Societa Edison. The plants are due onstream in '60.

Polio Vaccine/England: Chas. Pfizer's British subsidiary, Pfizer Ltd., has become the first U.S.-owned company to make polio vaccine in England. It has just released its first batch of 163,000 doses.

Chemicals/China: Communist China has launched a new drive to step up construction of 40 projects and have them in trial operation early this spring. Top priority projects: synthetic rubber and ammonia plants. The Ministry of the Chemical Industry also plans to set up small plants in major cities to produce sulfuric acid, soda ash, caustic soda, calcium carbide, acetone, butyl alcohol, other chemicals.

Pharmaceuticals/India: The Indian government is reported to be winding up negotiations with a group of West German companies to set up a \$30-million pharmaceutical and chemical intermediates plant.



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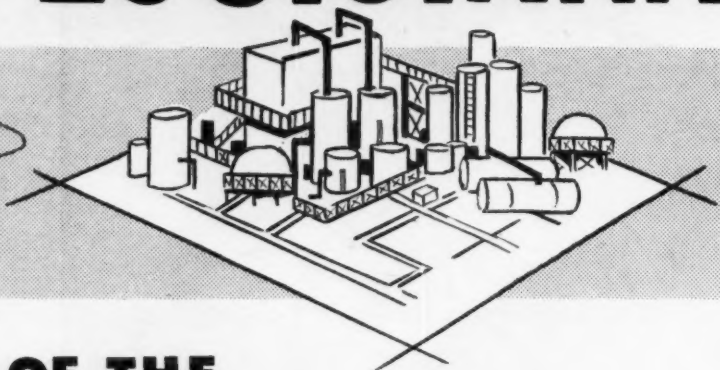
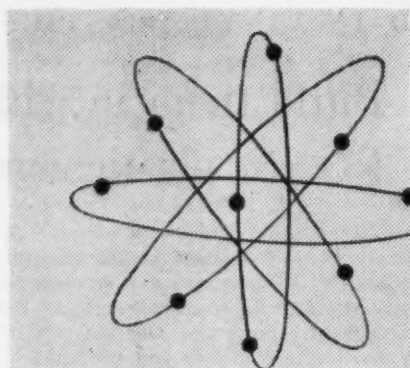
All 15 FLEXOL plasticizers are available from distribution points throughout the country. And, because of CARBIDE's wide variety of plasticizers, you can take advantage of the savings from combination tank car, tank wagon, and drum orders in LCL or carload orders. For more information on FLEXOL plasticizers, call the nearest CARBIDE office or write Department B, Union Carbide Chemicals Company, Division of Union Carbide Corporation, 30 East 42nd Street, New York 17, New York.

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EARL K. LONG, Governor

Washington Newsletter

CHEMICAL WEEK
March 28, 1959

Senate hearings on S. 11—the price discrimination bill—produced another round of pro and con testimony. As before, many manufacturer groups—like the Manufacturing Chemists' Assn.—oppose it; retail druggists are for it.

The bill would reverse a 1951 Supreme Court decision. The court said cutting prices in good faith to meet the equally low price of a competitor is a complete defense under the Robinson-Patman Act to charges of illegal price discrimination.

There's no doubt that passage of S. 11 would create new uncertainties for sellers under the already-complex R-P act. The fight over the bill is full of strange paradoxes, as well.

Kefauver's committee is attacking administered-price industries for failure to respond to competitive factors: prices go up or remain stable despite decreased demand and idle capacity (*see p. 21*).

And, according to an independent survey by the Bureau of Labor Statistics, the chemical industry is one in which prices are the least flexible.

Yet, Kefauver is leading the fight for S. 11, while critics say the bill would promote price rigidity. Henry Fowler, speaking for MCA, told Kefauver a principal reason MCA and the Synthetic Organic Chemical Manufacturers Assn. oppose S. 11 is that it "would lessen competition in the manufacture and sale of chemicals by reducing price flexibility."

The bill has only a slight chance of passing. Sponsors hope to get favorable Senate action before the end of this session of Congress. But the House will not take it up until next session. Passage depends on how much support retailers can drum up by then.

•
Reynolds Metals Co. violated the antimerger law, according to the ruling by a Federal Trade Commission examiner concerned with Reynolds' acquisition of a customer, Arrow Brands, Inc., which converts aluminum foil into decorative foil sold to florists. Examiner Frank Hier says if the "plight of these victims (eight or 10 other small converters facing competition from Reynolds) is to be ignored and written off as too insignificant, it will have to be for others, at higher levels, to do it." Hier's order, now subject to review by the full commission, would require sale of the Arrow assets acquired in '56 for about \$500,000.

•
A demonstration plant to convert brackish water into fresh—one of five plants under the government's new \$10-million experimental program—will probably use an ionic-membrane method developed in the Netherlands.

Washington Newsletter

(Continued)

On June 1, the Interior Dept. will name the next process to be developed; three more will be cited at three-month intervals. Interior has not yet decided whether the next plant will be for sea water or brackish. One unit already has been approved—a long-tube vertical multiple-effect sea-water distillation plant (*CW*, March 14, p. 29). Ralph Morgan of Purdue University, long-time consultant to the Office of Saline Water, is chairman of the committee. A different group may be named to pick the last two processes.

The Dutch method is favored for brackish water by the OSW staffers who feel it offers considerable promise. Some tests will be run soon at government labs in Denver.

Research on brackish water so far indicates potential for converting it at about 25¢/1,000 gal.—cheap enough to be competitive in many communities of the Northern and Great Plains states.

Indications are that the next distillation process for sea water will be a refinement of the method now used in a Westinghouse-built Kuwait plant, which is producing 1.2 million gal./day—slightly more than the expected output of the already-designated U.S. plant. The Kuwait plant applies vacuum to the water, causing it to evaporate at lower temperatures. Some experts claim it is superior to the process picked here, and the selection committee admits it had a hard time making a choice.

Other methods showing great promise include: solar system (at a northern Florida pilot plant); evaporation by steam from solar radiation (under study at Battelle Memorial Institute in Columbus, O.); and freezing.

A committee to select a site for the first demonstration plant will be named within a week or two. Political pressures are heavy—a number of senators and congressmen are seeking plants for their districts. Some 80 cities are offering inducements such as free sites.

FTC's proposed fiber labeling rules may be changed as a result of dissatisfaction on the part of synthetic fiber producers. Of the 16 generic fiber names proposed by commission technicians and trade experts, six are either too narrowly or too broadly designed to satisfy industry men. Particular dissatisfaction has been registered over the definition of rayon.

Producers have filed their arguments with the commission, which must make its final amended rules under the new labeling act by next spring.

There is no "immediate" prospect of an oral polio vaccine in this country, says Health, Education and Welfare Secy. Arthur Flemming. Controls over tests abroad have not been adequate enough to convince U.S. scientists that the live virus vaccine is completely safe and effective.

AIR POLLUTION

growing problem in the chemical industry

Chemico Gas Scrubbers in 415 Installations Provide 90-99.95% Removal Efficiency

"It is unpleasant at best, and can be fatal," is the sum-up by at least one expert about air pollution. The question generally posed is simply, "What can be done about it?"

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Depending on local conditions, regulations and operating requirements, Chemico equipment can be tailored to solve a wide variety of pollution control problems. Initial installation can be designed to meet minimum needs. If experience or changing conditions call for increased efficiency, this can be achieved to almost any degree with original equipment by merely increasing the power input. Where power costs are a factor, this flexibility feature of Chemico scrubbers is an important advantage.

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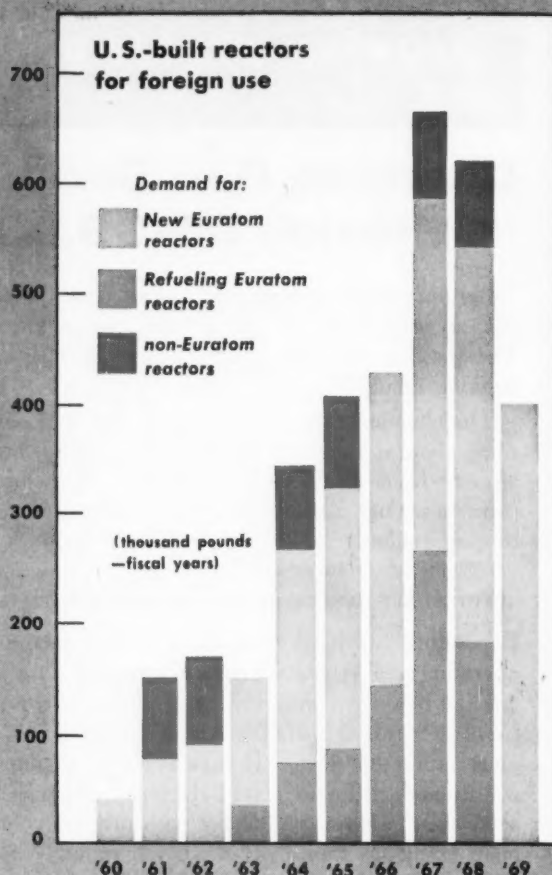
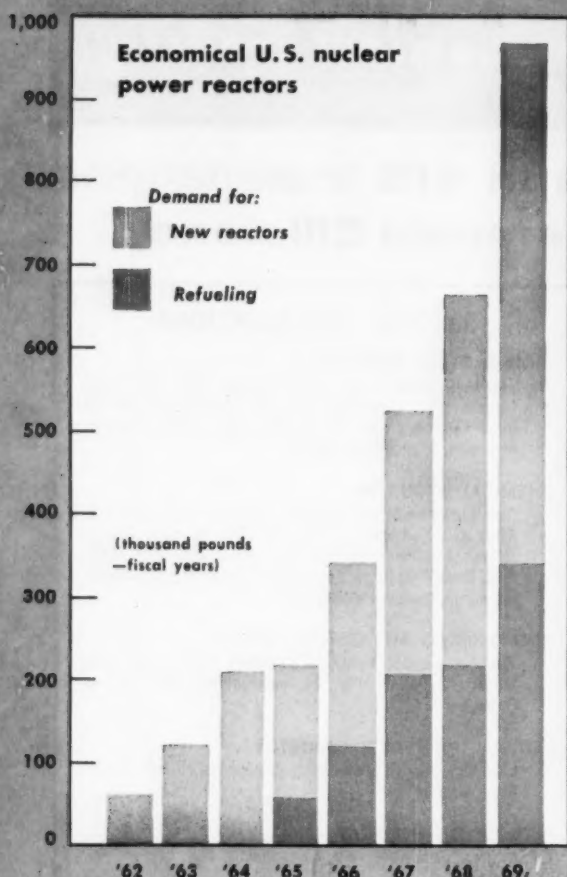


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MARKETS

Demands of New U.S. and European Reactors Brighten 10-Year



Uranium Oxide Upsurge Keyed to

Spencer Chemical has plunged into the atomic energy industry as producer of uranium dioxide for fuel elements (CW, Feb. 28, p. 20). A close look at the seemingly overcrowded market points up the glowing future for atomic fuels—particularly uranium dioxide—which doubtless helped Spencer decide to construct a 100,000-lbs./year dioxide plant.*

It has been generally assumed that the four existing producers of nuclear fuels (Mallinckrodt Nuclear, Davison Chemical, Nuclear Materials & Equipment, and S.W. Shattuck) had, by virtue of a head-start, won

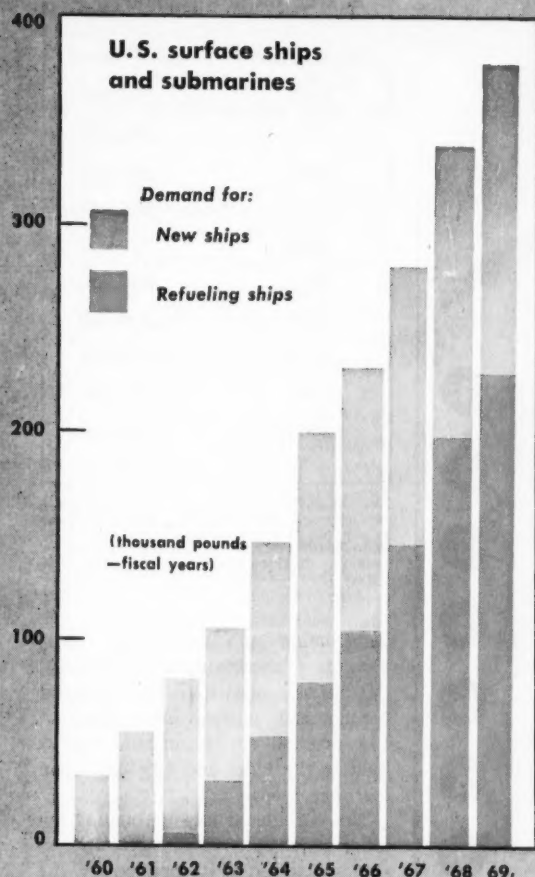
most of the foreseeable nuclear fuel markets. But Spencer was encouraged by two factors: the ever-brightening market outlook and faith in technical—hence economic—superiority of its own process.

Why Dioxide? Until a few years ago, metallic uranium was the only fuel used for generation of nuclear power; but the metal's troublesome physical changes during use, plus the need for difficult, costly alloying procedures, led to consideration of uranium dioxide.

Today, all planned, large-scale power reactors in the U.S.—with the exception of the Fermi Station fast-breeder reactor at Monroe, Mich.—will use uranium dioxide, mostly low-enriched material (less than 5%

*The new plant, now going up at Spencer's Jayhawk Works near Pittsburg, Kan., will triple the firm's current 50,000-lbs./year pilot-plant capacity.

Outlook for Uranium Dioxide



Nuclear Power

U-235 content). The dioxide has two disadvantages—low density and high neutron absorption—but these are more than offset by good mechanical strength and resistance to corrosion and radiation damage, all of which contribute to long fuel-element life.

Competition Delayed: Alternative nuclear fuels probably won't threaten the use of uranium for the next 15 years, but several other materials must be recognized as possible long-range competitors. Plutonium is one, thorium another. Use of thorium as a makeup material is theoretically attractive, but engineering problems—especially relating to corrosion—are considered formidable, will take a long time to solve. Uranium car-

bide could emerge as a competitive material during the next decade, but the dioxide, it's believed, will be hard to replace if it performs well.

The use areas of these various types of fuel elements were delineated just last month by Jesse Johnson, the Atomic Energy Commission's director of raw materials, who discussed the uranium business at a National Western Mining Conference session in Denver.

Most promising materials for fuel elements, said Johnson, are uranium dioxide (used for pressurized-water, boiling-water, and other types of reactors if desired), uranium monocarbide (considered for organic-moderated and liquid-metal-cooled reactors and new gas-cooled designs), and uranium-metal alloys (in fast-breeder reactors and sodium-graphite reactors). Plutonium reactors, he added, are in early development stage, and their technical feasibility and economics are yet to be demonstrated.

Blending Boosts Market? While considering AEC's role in future atomic fuel markets, Johnson noted that a substantial part of the uranium used in making enriched fuel could move entirely through commercial channels and never be handled by AEC. This could result, he said, from development of a blending procedure—theoretically possible but economically not yet proved—in which normal uranium would be combined with highly enriched material to obtain just the desired degree of enrichment.

According to Johnson, most reactor experts—especially in the U.S.—believe there's a definite economic advantage in use of enriched uranium. Only AEC facilities at present can supply large quantities of U-235-enriched material for domestic and foreign reactors; and because of tremendous capital costs of a large gaseous diffusion plant (AEC's facilities cost more than \$2 billion) it's unlikely that any will be built by private industry while atomic power is still in the development stage and reactors and fuel elements have not yet become standardized. For this reason, Johnson's suggestion of a blending method is being eyed with considerable interest by private industry.

Difficult Forecasting: Nuclear fuel producers readily recognize the difficulty of predicting long-range requirements, largely because demand will ultimately depend not only on technological factors, but also largely on the influences of radically differing pressure groups, e.g., private power companies, public power proponents. Views of the internationally oriented U.S. State Dept. are also to be taken into account.

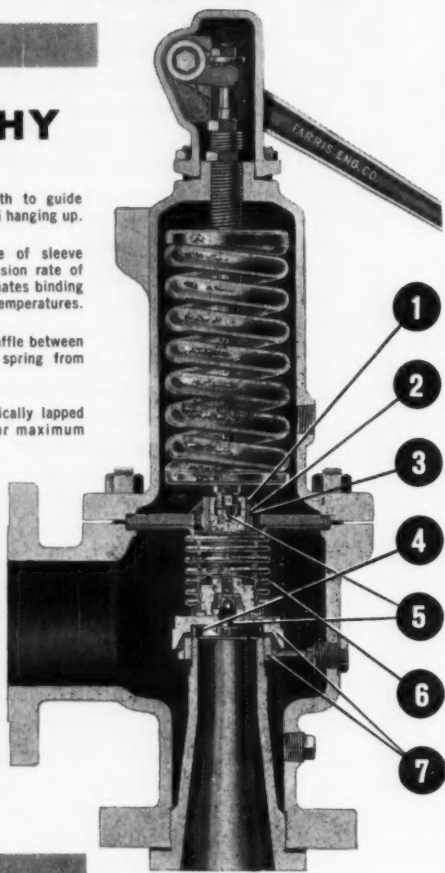
The unpredictable resultant of these various opposing forces makes current forecasts little more than benchmarks by which to judge the magnitude of each force.

CW's industry-derived uranium dioxide forecasts are based on evaluations of four general areas of demand: (1) requirements of U.S. power reactors built, under

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MARKETS

Total U.S. uranium dioxide demand for nuclear power*

Fiscal Year	Est. Pounds
1960	200,000
1961	280,000
1962	440,000
1963	550,000
1964	770,000
1965	950,000
1966	1,200,000
1967	1,500,000
1968	1,700,000
1969	1,900,000

*Substantial amounts of scrap are formed when fuel elements are fabricated: scrap generation in the '60s is expected to average about 20% of indicated demand—hence, total business for uranium dioxide producers may run 20% higher than indicated.

construction and committed (these are the "uneconomical" reactors); (2) dioxide needed to fuel expected "economical" nuclear power capacity; (3) demand for European reactors built in the U.S.; and (4) naval and maritime needs.

Not considered in this roundup are military and Atomic Energy Commission reactors (fuels supplied by the government), nongovernment test reactors, which generally use metal rather than dioxide, and nonnuclear uses for uranium dioxide.

Incidentally, all forecasts are for fiscal years ending on June 30 of the year mentioned.

Predicted uranium dioxide demands for "uneconomical" reactors are based mostly on core and enrichment needs as specified by prime contractors; where design data are inadequate, the forecast assumes that average enrichment will be 2.5%, that 10 lbs. of U-235 will be needed per electrical megawatt, and that average fuel-element life will be three years. Not accountable now, of course, are additional uneconomical reactors yet to be built.

Uranium dioxide demand for "economical" reactors is based on expected nuclear power generation in the next decade, and assumption that all re-

actors will use an average 2.5% enriched uranium, will require 10 lbs./emw. of U-235, that average fuel element life is three years, and that uranium dioxide sales will precede capacity by one full year.

U. K. Kingpin: The United Kingdom, with 6,000-emw. capacity to complete by '65, has the most substantial nuclear power program in the world; by '69, the U.K.'s nuclear capacity may equal that of all other countries combined except the U.S. Here's the expected '69 foreign lineup, according to the Atomic Industrial Forum: U.K., 12,000 emw.; Euratom countries, 8,700; other western European countries, 1,700; Canada and Latin America, 800; Asian-Pacific countries, 1,000.

The U.S. will, at best, supply only a very limited amount of equipment to the U.K.; hence, Euratom is the principal market area for U.S.-built reactors. The U.S. has pledged a \$135-million loan and enough enriched uranium for 20 years to provide fuel for six to eight reactors capable of producing 1,000-emw. power in Euratom countries. This power level will be reached in '65. Hence, all reactors built prior to this time should receive subsequent cores from the U.S.

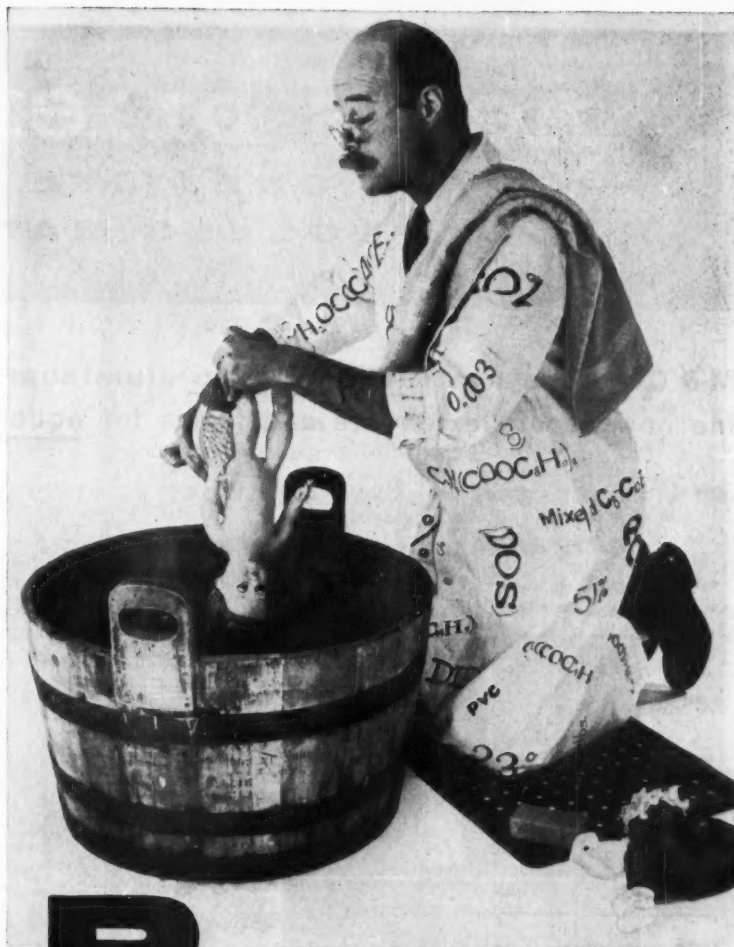
Outside Euratom, three uranium dioxide-fueled reactors for Belgium and Italy are under construction or planned in the U.S. It's assumed that the U.S. will supply subsequent cores for them. Generally, however, it's difficult to predict U.S. nuclear business abroad, outside Euratom, but there undoubtedly will be some additional demand for uranium dioxide.

Uranium Afloat: The best-defined and assured market for nuclear reactors is the naval reactor program, in which there are now four main areas of use: submarines, aircraft carriers, cruisers and destroyers.

Eight U.S. nuclear submarines have been launched, 13 are under construction (scheduled to be completed by '61), and 12 are planned (probably will be launched by '62).

Just two weeks ago, the U.S. Navy gave the go-ahead on construction of six atomic submarines—four to be built by civilian firms, two in government shipyards.

And last week, the British Admiralty revealed that a U.S. firm—Westinghouse Electric—will supply



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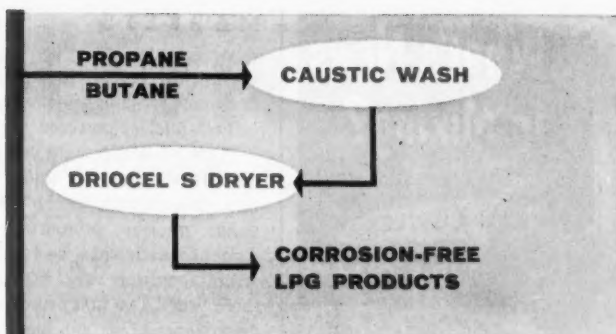
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MARKETS

the nuclear reactor to power Britain's first nuclear submarine.

Two nuclear-powered surface ships—a guided-missile light cruiser and an aircraft carrier—are under construction. It's thought likely that four to seven nuclear submarines will be launched each year, and two or three aircraft carriers are expected every three years. The first prototype nuclear destroyer will be in operation about '63 at the earliest; construction for fleet purposes, not before '65.

The first nuclear merchant ship, *NS Savannah*, will be launched in '60, will have a core containing 26,000 lbs. of 4% uranium dioxide. Between 1960-70, five to 10 nuclear merchant ships will likely be launched.

Forecasts of naval and maritime uranium dioxide demands assume that all nuclear-powered submarines will continue to use fully enriched uranium dioxide, whereas nuclear-powered surface ships will use an average 5% enriched uranium dioxide. It's expected that core replacements will be needed every three years.

Incidentally, the Atomic Energy Commission, as principal supplier of U-235, will remain an important factor in the industrial market for at least 10 years, according to AEC's Johnson. One reason: all reactors for mobile units, such as naval and commercial ships, use enriched fuel—i.e., fuel of higher enrichment than is used in reactors designed for electrical power programs.

Opposition Power Play: Proponents of atomic power have crashed head-on with opposing interests. It's not surprising, for example, that spokesmen for coal-, oil- and gas-based power industries are belittling the alleged urgency of atomic power programs.

Case in point: a few weeks ago, Philip Sporn, head of American Electric Power Co., in testifying before the Congressional Joint Committee on Atomic Energy, underscored the "grave danger" of overemphasizing the need for nuclear power; rather, he urged an intensified search for new sources of conventional fuels. For the next 50 years, Sporn said, we in the U.S. will depend heavily on orthodox fuels; and by the year 2000, they will still provide 80% of our energy.

The joint committee is hearing further testimony this month on the bill as a whole (military and civilian proj-

ects), but no authorization bill is expected to be voted out of committee until at least late April. Meanwhile, Washington sources express little real hope of a compromise genuinely acceptable to AEC, the joint committee and the industry. Despite rough going in Washington, uranium dioxide producers are moving ahead with considerable optimism about the ultimate boom in atomic power requirements.

Most industry witnesses agree with AEC that the U.S. should shoot for competitive nuclear power in high-cost areas in the U.S. in 10 years, in friendly foreign areas in about five years.

Equipment firms generally supported AEC's proposal to begin subsidizing up to 50% of total capital cost of selected prototype-size nuclear power plants; private utilities were noncommittal, public power and rural co-op spokesmen expressed grave doubts.

AEC's proposal of a bill to authorize an \$85-million civilian atomic power program for fiscal '60—involving starts on five or six reactors—was labeled "pitifully inadequate" by Democrats who plan to beef it up.

The ultimate importance of atomic power isn't, of course, questioned—crux of disagreement is how fast nuclear projects should be pushed here and abroad. In any case, uranium dioxide promises to be in the vanguard during the coming decade.

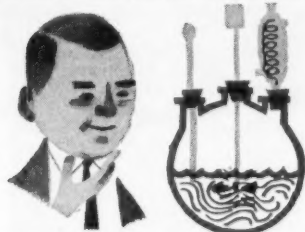
Uranium Dioxide Demand for 'Uneconomical' Reactors

(built, under construction or
committed)

Fiscal Year	Demand Forecast (pounds)
1960	131,000
1961	74,000
1962	131,000
1963	180,000
1964	74,000
1965	131,000
1966	179,000
1967	74,000
1968	131,000
1969	179,000

AEROSOL® TR

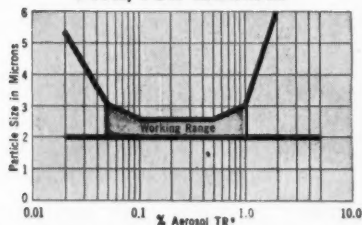
A NEW Surfactant That Produces Effective EMULSION POLYMERS



Emulsion polymerization enthusiasts are hailing a new aid to their art. Volume users are intrigued with the assurance of plentiful supply from Cyanamid's expanded production facilities. It's AEROSOL TR sodium bis (tridecyl) sulfosuccinate — a homologue of the well-known AEROSOL® OT Surface Active Agent. Having a very high oil solubility, AEROSOL TR is particularly effective for oil-in-water emulsions — and in emulsion-polymerization. For example, it offers:

- 1 — An unusually wide working range of surfactant concentration
- 2 — Production of small emulsion particles in a narrow size range

PVAc, FOR EXAMPLE

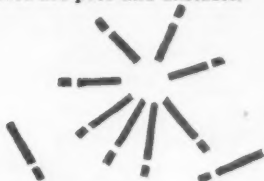


Thumbnailed above is a plot of particle size (microns) versus surfactant concentration for a typical vinyl acetate polymerization. Note, please, that a stable emulsion of very narrow particle size distribution range is formed through a twenty-fold concentration range of 0.05% to 1.0% AEROSOL TR. At an optimum (and still quite low) AEROSOL TR concentration of 0.1 to 0.5%, the resulting emulsion is stable, of low viscosity — and ideal for use in paint vehicles, adhesives, or coatings for fabric or paper. High rub resistance and storage stability in the emulsion form are complemented by excellent water resistance in the dried film.

A MATTER OF MICELLES

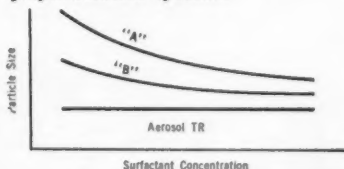
Work done at our Stamford Laboratories has borne out (to our own satisfaction at least) the micelle hypothesis of emulsion polymerization mechanics. At a certain critical concentration (approximately 0.03% in the case of AEROSOL TR), the surfactant ions start grouping into clusters, or "micelles," which act as centers for polymerization activity. We have found that suitable polymerization occurs only in the surfactant

range where micelles are formed. At higher concentrations, the surfactant micelles tend to approach colloidal structure, and in such ranges (over 1.0% for AEROSOL TR) polymers formed are poor and unstable.



AN EXCEPTION TO A RULE

The rule, which is not entirely hard and fast, is that emulsion particle size tends to decrease as surfactant concentration increases. Under conditions of practical manufacture, this can result in noticeable variation in emulsion characteristics. An exception is our new AEROSOL TR. Through a twenty-fold concentration range, the resulting PVAc emulsion diagramed keeps within a particle size spread of 2 to 3 microns — and this is typical of its action in other emulsion polymerization systems.



WE'LL SHARE SOME KNOW-HOW

For example, we have an informative data sheet on the formulation and polymerization techniques of AEROSOL TR relevant to vinyl acetate and styrene. Our technical booklet on Surface Active Agents lists the properties, formulations, and application information of our other surface active agents, while our AEROSOL 22 booklet deals specifically with product information on this amazing surfactant. A check mark on the coupon below will bring them to you.

In our emulsion polymerization work, we are concerned with the broad field of resins and the wide range of AEROSOL Surfactants. A great deal of data has been accumulated that has not yet been formalized into technical bulletins. If you have a problem or two in emulsion polymerization, why not call in our field representative. He will obtain for you information that will be of assistance.

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AEROSOL® 22 • AEROSOL® MA
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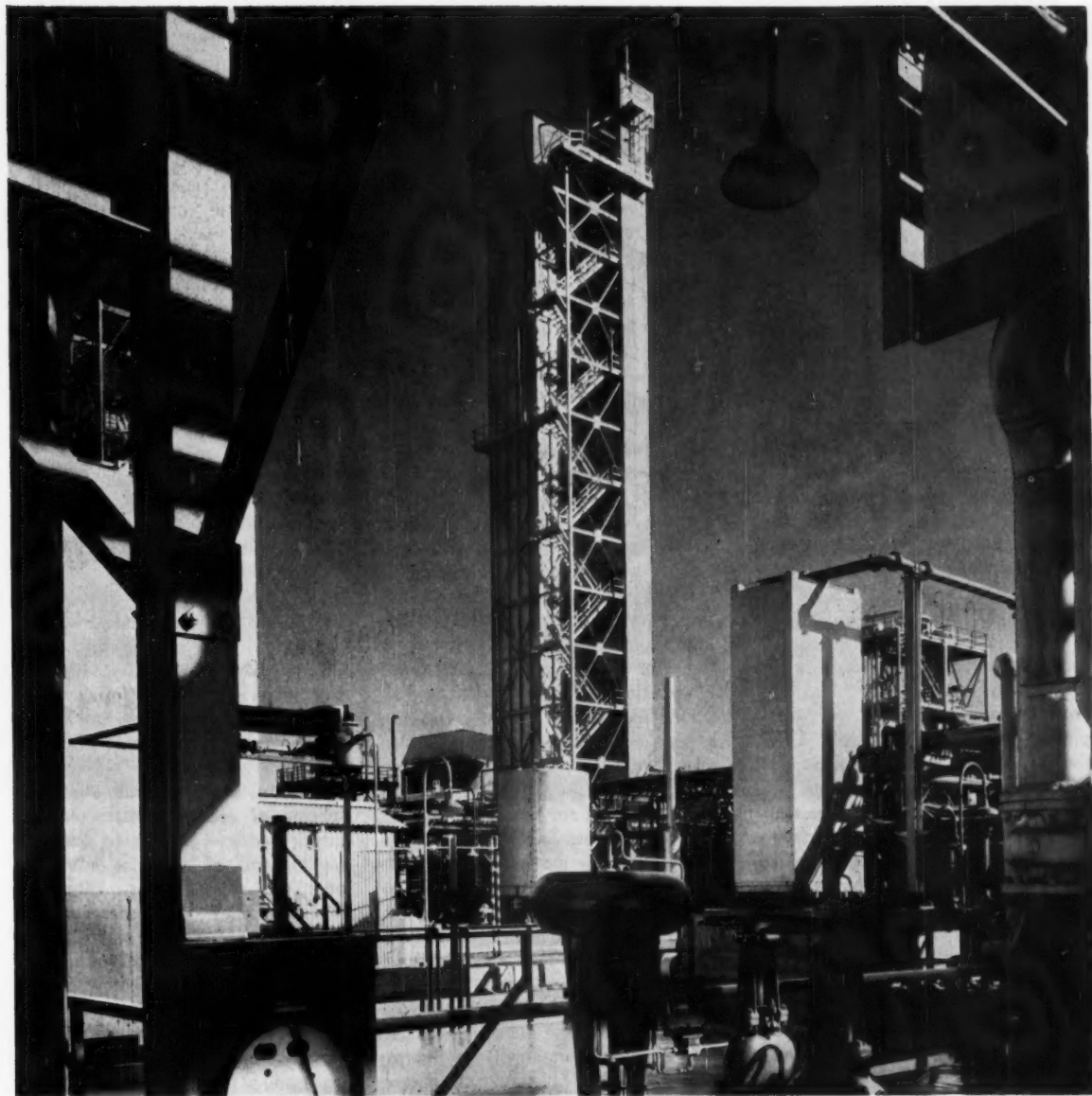
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ENGINEERING



Processing innovations and know-how proved in Grace's Memphis plant (above) go up for sale.

Urea Process Package on the Block

Last week saw a big move in urea. W. R. Grace & Co. completed a novel arrangement under which it will add its urea-processing know-how to that of Pechiney and Foster Wheeler.

The three firms are now offering, through Foster Wheeler, a new process package—the Pechiney-Grace urea process—that includes the several proved engineering modifications and

new processing units incorporated in the initial installation and currently being installed in the expansion of Grace's Memphis plant (*CW*, Feb. 22, '58, p. 40).

Grace's original license from Pechiney covered only synthesis operations through the decanter.

But the new licensees will be able to obtain such added features as im-

proved evaporation units, prilling facilities, ammonia recovery system and special product finishing operations.

Though licensing provisions for the feedback of technical information from licensee to licensor are nothing new to the chemical industry, Grace's role in the new cooperative setup is unusual for a producing company. Reasons: Grace has agreed to furnish

Foster Wheeler with engineering know-how and process designs based on its own operating units and will actively cooperate with the engineering firm in the design of each future urea plant; as a separate service, if desired, Grace will consider entering into a separate agreement with a licensee to assist in operator training, process control, startup, operation and maintenance of a Pechiney-Grace process plant.

Since this arrangement puts Grace in a position where it will be handing over its hard-won processing experience to potential competitors, it raises some interesting considerations of competitive positions. But all three participating firms are convinced that the alliance will be mutually beneficial to themselves and to licensees of the new process package.

Pechiney stands to gain by acquiring production-tested finishing processes that supplement its basic urea synthesis. Under its original license agreement with Grace, Pechiney was entitled only to those engineering improvements and modifications made in the synthesis section of the plant. But now it's the first licensor of a total-recycle process that can offer a complete package from the feed end of the process right on through to a variety of standard urea products.

Foster Wheeler feels that the technical know-how and consulting services of Grace's experienced production team will be a valuable addition to its own experience in the engineering design and construction of Pechiney urea plants. Foster Wheeler handled the scale-up of Pechiney's 1-ton/day pilot plant to a 260-tons/day installation for Deere (Pryor, Okla.) and to the original 150-tons/day Grace plant at Memphis, and has worked closely with Grace on the current expansion.

A purchaser of the Pechiney-Grace process will also have the opportunity to negotiate directly with Grace for additional services not provided in the license. For instance, the customer may wish his personnel to receive operational training either at Memphis or at his own plant during and upon completion of construction. Such consulting and training services would be particularly beneficial for a plant being built overseas where operational engineering know-how is not readily available.

Though close corporate control or outright ownership of an engineering firm by a chemical company has often been cited as a deterrent to engineering business from competitive chemical firms, Grace's participation in the three-way urea setup is expected to have quite the opposite effect. Reasons: there is no corporate relationship between the three companies; Grace's worldwide operations have won it recognition in many foreign countries—several of which are expected to be in the market for urea-production facilities in the near future.

How does Grace feel about aiding a potential competitor that might "move in right across the street?" Says Bill Haude, president of Grace Chemical Division: "If anybody wants to make urea today, nobody is going to stop them by not cooperating with them. By giving them the benefit of our know-how in what we believe to be the best total-recycle urea process, I think we can gain some friends in the complex chemical industry. Besides, everyone's competitors become his customers at one time or another."

As for remuneration, Grace's share of royalties will not add to the over-all license fees; the cost of its consulting services will be included in Foster Wheeler's engineering and construction charges. Costs of additional services contracted for separately will be negotiated, depending on the amount of special help the customer wants.

However, Grace expects to derive several intangible benefits from the arrangement. For example, continuing cooperation between Grace's and Foster Wheeler's engineers may lead to additional modifications that would further improve the plant's efficiency. "No one has a monopoly on brains or new ideas," says John Carriere, vice-president and plant manager of the Memphis plant. "We're always searching for—and receptive to—ideas that may lead to the ultimate in plant efficiency."

Improvements Installed: Almost all of the synthesis modifications and urea finishing innovations developed by Grace have been onstream for some time at Memphis. One major revision of the salt-oil reactor section of the synthesis train has been fully piloted and developed and is now being installed in the expansion to be completed within the next few months.

The biggest single change has been

the addition of a new ammonia recovery system that now returns about 10 tons/day of unreacted ammonia to the process. This makes the unit a closed system with complete recycle and provides substantial savings.

New purification units are living up to expectations, says Grace, assuring that products will meet rigid purity specifications. Details of the purification system still come under the heading of secret company know-how, but will be passed on to new licensees as part of the three-way arrangement. The effectiveness of the purification system is clearly shown, says Grace, by the purity of the product, which is claimed to contain fewer parts per million of oil than urea made by any other process. (In the Pechiney synthesis, oil is used as a carrier; in other processes, oil is picked up from the lubricants used in the various equipment components.)

Competitive Edge? Though the inclusion of Grace's production experience is undoubtedly a valuable addition to the package offered by Foster Wheeler, the Pechiney-Grace urea process still faces stiff competition from several other established routes, such as the Chemico, Inventa, Montecatini, Dutch State Mines processes.

Foster Wheeler has long emphasized the advantage of Pechiney's scheme of recycling unreacted ammonia and carbon dioxide (carbamate) in oil as a major advantage over the other routes. Oil-recycle eliminates the need for separating unconverted reactants; oil slurry can be recycled by pumping at lower costs than those incurred in recycling gas by compressors.

The cost of producing urea by the various processes available for licensing spans a fairly narrow range. The choice of routes is largely dependent upon the synthesis cycle employed (i.e., once-through, partial-recycle or total-recycle) and upon tie-in operations. The importance of the latter consideration is evident in Grace's decision to use the Dutch State Mines process in a 70-tons/day plant being built in Trinidad for Federation Chemicals, Ltd. (partly owned by Grace). The deciding factor, in this case, was the compatibility of the DSM process with tie-in fertilizer facilities that will utilize the unreacted ammonia, thereby eliminating the problem of recycling carbamate.

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SRI's Burns: 'European research will yield big dividends for the CPI, by supplying a new outlook, fresh approach, keeping cost down.'

Next week's American Management Assn. symposium,* "Capitalizing on European Research," is the latest indication of growing U.S. activity in utilizing foreign scientific brainpower. This is underscored by the increasing number of U.S. firms establishing European research labs.

This week, in fact, Du Pont researchers in England are readying the firm's new laboratory for its official opening next May. And it follows right on the heels of American Cyanamid's new Geneva research lab (*CW Technology Newsletter*, March 7, p. 91).

They are but two of a whole spate of labs American companies have strung across the European continent. Among them: Monsanto (Zurich); W. R. Grace (Zurich); Union Carbide (Brussels); Smith Kline & French (England); Bell Laboratories (Antwerp); RCA (Zurich); IBM (Zurich); Battelle Memorial Institute (Frankfurt and Geneva).

Three Ways: R. M. Burns, who heads up the Zurich office of the Stanford Research Institute, just back from Switzerland to speak at the symposium, told *CW* editors: "There are three ways to turn a profit from European research know-how: (1) meet with the key staffers of European firms; (2) establish your own laboratory; (3) establish or contract for the services of a "listening post."

Laying the Foundation: Burns, who has run SRI's listening post since its inception in '57, advises: "The most exclusive method is, of course, to establish your own laboratory, but it's wiser to start with a listening post or executive visits, for two reasons.

"First, to determine where the best contacts in your field of interest are located, and to allow your own executives to familiarize themselves with the European research outlook as it pertains to your firm and its problems.

"Second, it's cheaper. A reasonable estimate for a six-week visit to Europe, including traveling and living expenses for one representative, is

*March 30-April 1, Hotel Astor, New York.

European Research

\$3,000. (The principal limitation on this method, however, is the lack of continuity, resulting in loss of opportunities for the utilization of the information.)

"Establishing your own listening post on a full-time basis would cost \$20,000-30,000/year (for rent, travel expenses, supplies, utilities, secretarial help, etc.), but not including the salary of one or two trained technical observers. You can, of course, contract the services of one of several established listening posts, which will, for a fee, do general survey work in your field as well as handle specific assignments. SRI's Zurich office is such an organization, has a small number of U.S. firms on its roster, charges an \$8,000/year flat fee. (The SRI office, incidentally, started as a private listening post, took on assignments to help defray operating costs.)

"All the varieties of listening posts, and visits by executives, are considerably less costly than a full-scale European laboratory operation (estimated cost: 70-90% of the cost of running a laboratory in the U.S.), but the lab may be the only way to produce the desired results."

Lab Benefits Greater? Many CPI companies have spent large sums establishing their own labs across Europe. When queried by *CW* editors,

each had its own reason for establishing its lab, picking the specific location. Among them:

American Cyanamid — According to Robert Swain, the firm's vice-president for process development and research, "Our lab cost \$1 million, will be devoted to long-range chemical and biological research." He adds, "There will be no Americans on the full-time staff; we want to take full advantage of the European methods of research."

Smith Kline & French—A spokesman at the company's Philadelphia laboratory noted, "We chose England because they have the outstanding European physiologists there. The lab, established four months ago, will house a staff of 40 scientists and technicians, does basic and applied product-oriented research."

Du Pont—Has taken a different approach than most U.S. CPI firms with overseas labs. David Conklin, managing director of Du Pont Co. Ltd., told *CW* that "the lab at Herfordshire will be used to aid rubber manufacturers in Europe."

Union Carbide—Found it more advantageous to contract research problems out, has maintained "highly successful" relations with a lab in Brussels.

Monsanto — "Switzerland's demo-

cratic traditions, stability, eminence of scientific institutions" were all deciding factors in placing the lab in Zurich, according to Nicholas Samaras, president of Monsanto Research SA. He drew his staff from top-flight European universities.

But beyond the special reasons for each lab, all agree on the following "basics":

- European researchers offer a U.S. chemical company a new outlook, a fresh approach to basic and fundamental research problems.

- The cost of upkeep is lower than it is in the U.S. One firm, in checking various locations prior to settling on one, turned up these figures: cost per professional man, including all services — U.S., \$34,000/year; France, \$21,000/year; Netherlands, \$20,000/year; Germany, \$17,000/year; England, \$13,500/year.

- So large a number of technically trained Europeans know English today that there is virtually no communications problem.

- The lab should be run by a foreign national, preferably one who is a citizen of the country in which the lab is located. It gives a greater sense of "belonging" and security to the personnel. Monsanto's Zurich lab is the outstanding exception, has an American scientist in charge "who has long experience in Monsanto operations."

- The lab should not be used for any other purpose (e.g., as a sales or



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... maintain a listening post on a full-time basis.'

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RESEARCH

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SRI's Burns advises: "No matter which system you choose to fit your needs, don't go over with plans to take value out of Europe and give nothing in return. European industrialists and scientists are quick to turn a cold shoulder on 'spies.'"

EXPANSION

- Metal and Thermit Corp. (Rahway, N.J.) has purchased a previously rented laboratory in Detroit, will accelerate the existing research in chromium, copper, nickel and tin plating. Plans also include a program of new basic research in electrochemistry.

- Hercules Powder Co. (Wilmington) has formed a new applications group, the Plastics and Elastomers Division. Major interest: development of thermoplastic polymers, thermosetting resins, filled and reinforced plastics, rubber compounding and evaluation.

- The Office of Naval Research (Washington, D.C.) has added a Propulsion Chemistry Branch. It will research solid and liquid propellants, the chemistry of combustion. Ralph Roberts will head the branch.

LITERATURE

- "Chromatography on Aluminum Oxides Woelm," second edition, is a 24-page booklet describing methods of chromatography using aluminum oxides. It's available at no charge from Alupharm Chemicals (U.S. representative of M. Woelm Eschwege, Germany), 616 Commercial Place, New Orleans.

- Textile dyeing methods is the subject of a free booklet available from Allied Chemical Co.'s National Aniline Division (New York). It is divided into four parts: a general description of textile fibers; classification of dyestuffs; explanation of the dyeing process; and the dyeing of various fibers with specific dyestuffs.

- A new 400,000-volt Van de Graaff positive-ion accelerator is described in "Bulletin PN," available free from High Voltage Engineering Corp. (Burlington, Mass.). The accelerator is said to be adaptable to many applications usually requiring higher cost systems, can operate at energies "considerably" above 100 kv.



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SALES AND DISTRIBUTION

PLANNING THE PATH TO MARKET

How ADM timed development of its new water-base paint resin

Jan. '56	Laboratory development
Oct. '57	Pilot-plant schedules and batches
Nov. '57	Sample evaluation by selected customers
Dec. '57	Exposure panel schedules
April '58	Field tests by six major users
July '58	Full-scale production batches
July '58	Technical literature, demonstration panels
July '58	General promotion campaign deadlines fixed
Aug. '58	Briefing of sales staff on product
Oct. '58*	Presentation to industrial finish makers

* Still going on.

Tight Schedules Speed Product Launching

Archer-Daniels-Midland Co. (ADM) will shortly complete final phases of a tight timetable (see chart) designed to launch its new, water-base paint resin, Arolon-1000, into the marketplace.

Operation of the plan has prompted Minnesota Mining & Manufacturing (3M) to ask ADM for a "how-we-do-it" presentation. More significant, the plan has already established the material as a contender in a \$125-million market, although the product was formally introduced less than six months ago.

Special showings on the West Coast of "Fire Away," a 14-minute color film that describes the product and its applications, will wrap up the introduction. These showings will boost to well past the 2,000 mark the number of paint industry men (and their customers) that have seen the presentation. As a result of these showings, ADM says, it will have "penetrated in depth" the bulk of the major market

for the resin: 500 industrial-finish makers and 500 manufacturers of both industrial and architectural finishes.

Key elements in ADM's approach were the timetable and the film. The timetable was designed to shake down a host of factors—ranging from laboratory development to samples to customer presentation—into a program for commercializing the product. The movie was chosen as the fastest means of promoting the product to large numbers of prospective customers.

Timing is vital in product introduction. Too early introduction entails risk of insufficiently developed products; unexpected kinks can easily give a product a bad reputation. But undue delay increases the chance of competitors' getting to market first.

Hence, it's not surprising that ADM's first objective was to produce a research, development and production plan that would get the product ready for the market "at the right

time." And even with the emphasis on speed, ADM found many a competitor readying similar products (*CW*, Nov. 15, '58, p. 71).

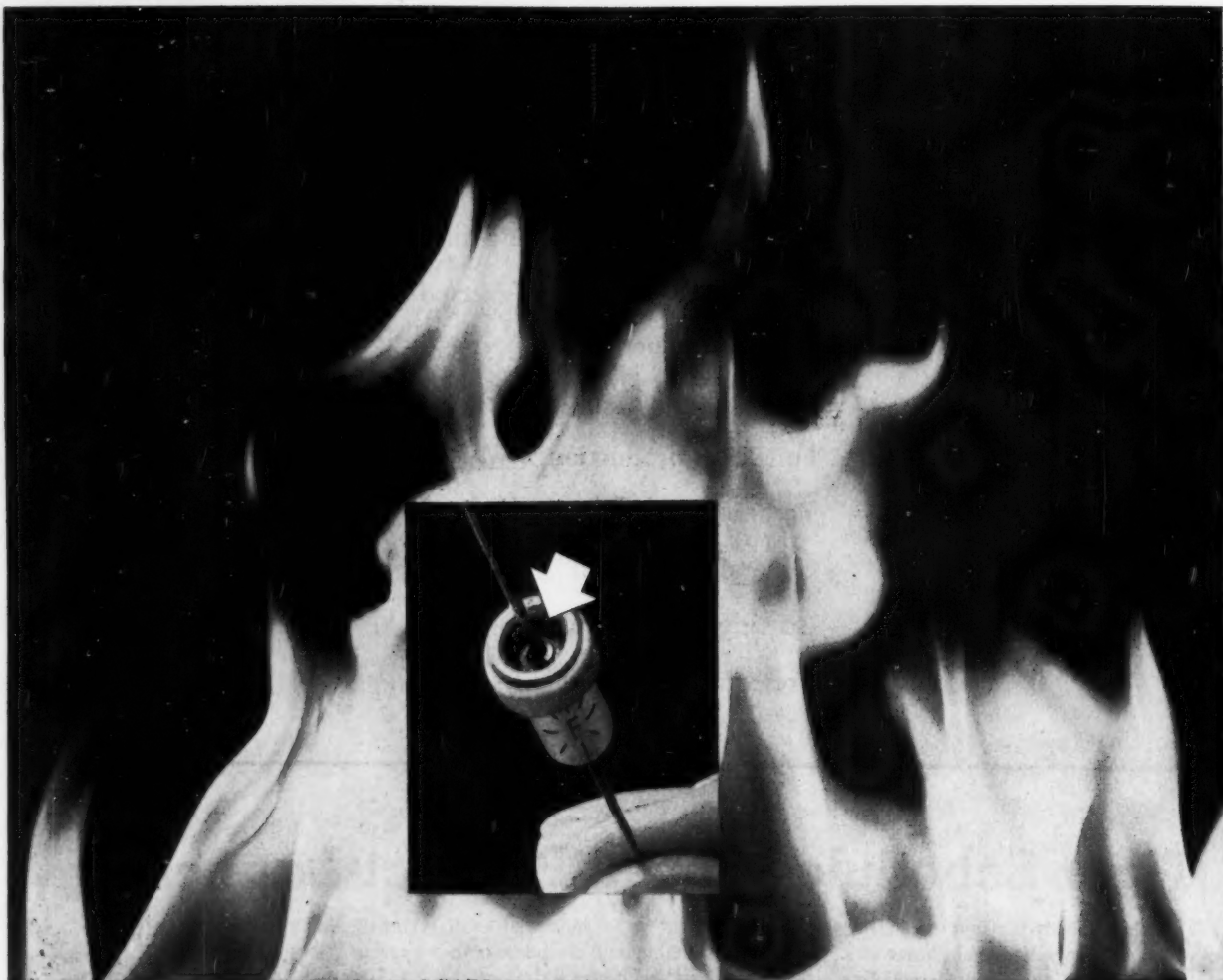
To the first objective ADM added three others: follow the formulated plans on schedule; brief the sales force thoroughly; give salesmen as complete a "merchandising package" as possible.

Setting Up: The idea for the product, says Fred Burnett, manager of production and sales planning for ADM's resin and plastics division, originated in definite form about two and one-half years ago when technological developments indicated that such a product could be made.* Tentative plans were made to introduce the product late in '58. A laboratory development program was initiated that led to pilot-plant batches some 22 months later. It was at this point that

*The possibility of the product was first realized several years earlier when fundamental research on water-soluble paint resins was started by the company.



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KEL-F® SEAL PROTECTS CAPACITANCE

Keeping a cap on runaway current at extreme temperatures demands a rugged hermetic seal. That's why Fansteel Metallurgical Corporation has chosen KEL-F Brand Halofluorocarbon Elastomer seals (arrow) to boost the temperature performance of its sub-miniature "HP" Type Tantalum Capacitors from 85°C. to 125°C.

But more than just a wide temperature range was needed. And KEL-F Elastomer provided the unique combination of properties Fansteel required. The elastomer is not only remarkably stable dimensionally, it also gives the resiliency

needed to effect a permanent hermetic seal. And it is chemically inert! Thus, corrosive materials in the capacitor won't affect the seal even when they are hot or carrying large electrical loads. (KEL-F Elastomer exhibits excellent electrical properties, too.) What's more, the seal won't oxidize at high temperatures!

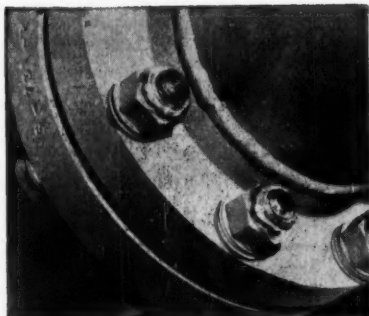
Why not get all the facts about KEL-F Elastomer performance characteristics? They might well answer your own special needs.

CHEMICAL DIVISION

MINNESOTA MINING AND MANUFACTURING COMPANY

... WHERE RESEARCH IS THE KEY TO TOMORROW





THE LIFE of jet and rocket equipment may hang by the thread of an internal fastener. Were it not for KEL-F Plastic inserts in self-locking fasteners made by the Elastic Stop Nut Corporation of America, strongly reactive fuel substances could leak past the bolt threads of fuel line joints, destroying vital components. The Kel-F insert also locks nut firmly in place.



FLEXIBILITY in Atlas Mineral Products Company's trowel-applied REZKLAD Epoxy Flooring Compound is achieved with CARDOLITE® Brand Resin NC-513. This 3M flexibilizer gives the compound high impact resistance as well. The result: No sign of wear from continuous industrial or commercial traffic. And characteristics of the flooring won't change with age.

...AT +125°C.

See what 3M chemicals can do for you! For free literature, write on your company letterhead, specifying product interest, to 3M Chemical Division, Dept. WE-39, St. Paul 6, Minn.



3M CHEMICAL DIVISION, MANUFACTURERS OF:
 Acids • Resins • Elastomers • Plastics
 • Oils, Waxes and Greases • Dispersion
 Coatings • Functional Fluorochemicals
 • Surfactants and Inert Liquids.

SALES

the timetable for research, production, sales, technical service and advertising was firmed up.

Sample evaluation by selected customers began one month later. Panel exposure tests were under way in two more months, and detailed field testing began five months later—a total of 28 months after initiation of laboratory development. The final formulation of the product was "frozen" in the 24th month.

Much of the work was carried out concurrently to speed development. At the 31-month mark, when full production batches began to roll out, preparation of technical bulletins, demonstration panels, promotion and publicity campaigns also began.

Aid from Technical Service: ADM's technical service department figured in much of the actual work. It functioned as liaison between research, development, sales and production. Evaluation work was largely its responsibility. And, reports ADM, the department played a big role in designing the ultimate promotion package—determining who should receive the product message, and assisting in preparation of promotional materials and customer instruction in formulation and use of equipment.

Promotion Send-off: ADM early recognized the import of promotion. To achieve it, the firm aimed broadsides at three groups: its own sales staff, independent paint manufacturers, and the users of the finished coatings.

It considered, but rejected, technical seminars, sales kits and sales meetings as primary promotion tools. Seminars, for example, would have entailed costly (in money and time) traveling of a group of skilled personnel. To do the whole job, sales kits would have had to be bulky. And neither kits nor seminars would lend themselves to such a dramatic demonstration as extinguishing a blowtorch flame with the water-base resin. And especially important, says the firm, was the need to police product claims: necessarily unfamiliar with a new product, salesmen can too easily overstate the case.

ADM finally settled on a color film. The reasons the company gives:

- It offers flexibility in picturing the test panels, testing procedures and results.
- It permits careful editing by

company research personnel to qualify introductory claims and to eliminate exaggerations.

- It allows use of dramatic, memorable demonstrations.

- It realizes optimum balance between effectiveness, speed, economy.

ADM relied heavily on its own staff in producing the film, used only one professional actor. As a result, the film cost only about \$11,000.

The movie was displayed at the recent paint exposition in Cleveland. Showings at local paint and varnish production clubs and ADM customer locations were next in order. To ensure maximum viewing, the firm equipped eight regional offices with prints. To date, ADM's staff has shown the film more than 300 times.

The film, says ADM, is proving to be a prestige-builder. The company believes it is aiding the sale of other products. And it will get extra mileage from the film by showing it as a morale-booster to all ADM employees.

The company backed up the film by thoroughly briefing and equipping salesmen to handle the product. Three teams of ADM men hit the road to acquaint the sales staffs with the facts. Meetings were held in 10 major cities. Sales staffers previewed the film, each receiving a merchandising package that included technical literature, sales kits containing suggested talks for customer meetings, information on publicity plans, and display panels and samples to use in making calls. The briefing was detailed enough to enable salesmen to answer questions arising from a film presentation. And the question period, the firm found, was always a lively one. That indicates, it claims, that the film had hit the mark.

Tabbing the Result: Protective coating manufacturers normally test new resins in their own plants with their own products and under their own conditions. Hence, it will be some time before ADM's results are known.

But the company is hopeful of developing the total potential market (\$2 million) for the product within two years. It has reams of figures on the number of film viewers. But most indicative of a payoff is this factor: current sales of Aroclor-1000, it says, "are right on schedule." Moreover, the firm expects to use its product-launching methods—in full or in part—on related products that could have dollar sales of \$18-20 million/year.

LET'S TALK GERMICIDES

Mr. Manufacturer: If your product must have a

**FUNGICIDE
DEODORANT
BACTERICIDE
ANTI-DANDRUFF
PRESERVATIVE**

you will profit by investigating the new Germicides developed by the R. T. Vanderbilt Company. An impressive series is available for specific uses. The few mentioned here are typical.

VANCIDE® 89RE is remarkably specific as an anti-dandruff agent. It is also unusual in its effectiveness against both Gram positive and Gram negative bacteria. It is non-toxic and non-irritating.

VANCIDE® BL is our name for Bithionol USP. It is a superior bactericide for use in soaps and other antiseptic skin preparations.

METHYL TUADS® WT is tetramethyl thiuram disulfide, specially purified by an exclusive Vanderbilt process. It reduces odor producing bacteria on the skin.

You incur no obligation by asking Vanderbilt to suggest the best Germicide for your needs.



**R. T. VANDERBILT CO.,
SPECIALTIES DEPARTMENT
230 PARK AVENUE
NEW YORK 17, N. Y.**

P-6

- () Send VANCIDE 89RE Bulletin 18C
() Send VANCIDE BL Bulletin VBL-1C
() Send METHYL TUADS WT Bulletin MT-1C
() Please send samples

State application _____

Name _____

Title _____

(Please attach to your Company letterhead)

SALES

DATA DIGEST

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how to trap a ghost



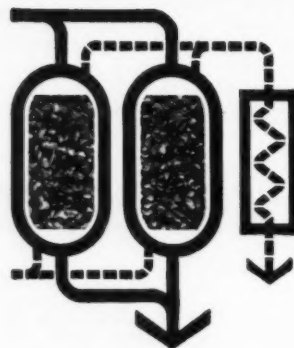
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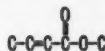
activated carbon



We supply a complete line of activated carbons for every purpose; design and prefabricate complete purification, separation, and recovery systems to meet your particular needs. Write for Bulletin J-100 and recommendations on your specific application. Barnebey-Cheney, Columbus 19, Ohio.

Barnebey Cheney

Eastman Briefs FOR MARCH



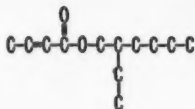
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Form liquid
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Boiling point, 760 mm. 118°C
Purity, % 99+

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Eastman Chemical Products, Inc.
Kingsport, Tennessee

B5



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B6



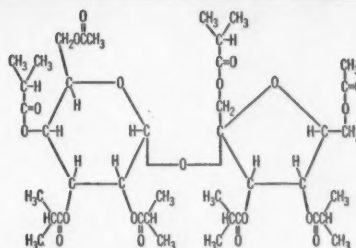
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B7



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Eastman Chemical Products, Inc.
Kingsport, Tennessee

B4

Chemicals Division

Eastman Chemical Products, Inc.
subsidiary of Eastman Kodak Company
Kingsport, Tennessee

CW

Please send more data on these chemicals:

B4 ☐ B5 ☐ B6 ☐ B7 ☐

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Title _____
Company _____
Address _____ Zone No. _____ State _____

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LET'S TALK GERMICIDES

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DEODORANT
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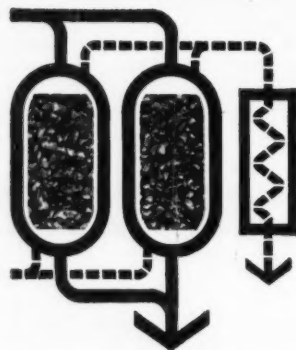
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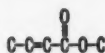


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**Barnebey
Cheney**

Eastman Briefs

FOR MARCH



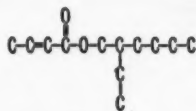
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Form	liquid
Sp. Gr., 25°C	0.946
Boiling point, 760 mm.	118°C
Purity, %	99+

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Eastman Chemical Products, Inc.
Kingsport, Tennessee

B5



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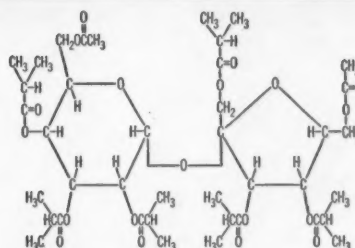
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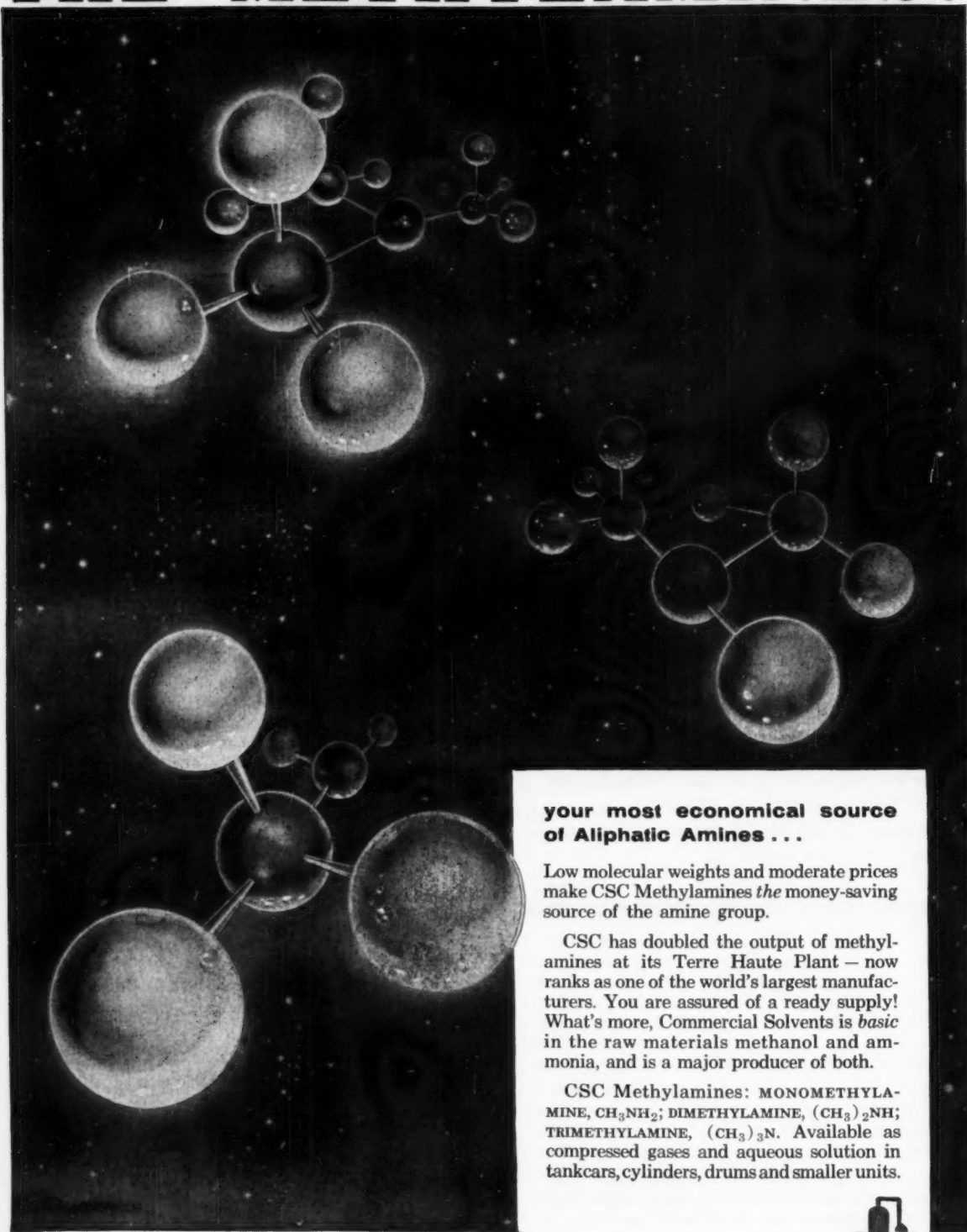
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Low molecular weights and moderate prices make CSC Methylamines *the* money-saving source of the amine group.

CSC has doubled the output of methylamines at its Terre Haute Plant — now ranks as one of the world's largest manufacturers. You are assured of a ready supply! What's more, Commercial Solvents is *basic* in the raw materials methanol and ammonia, and is a major producer of both.

CSC Methylamines: MONOMETHYLAMINE, CH_3NH_2 ; DIMETHYLAMINE, $(\text{CH}_3)_2\text{NH}$; TRIMETHYLAMINE, $(\text{CH}_3)_3\text{N}$. Available as compressed gases and aqueous solution in tankcars, cylinders, drums and smaller units.

Industrial Chemicals Department

COMMERCIAL SOLVENTS CORPORATION

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Technology

Newsletter

CHEMICAL WEEK
March 28, 1959

Nuclear equipment business is closer to predicted sales volume.

AEC last week disclosed preliminary results of a survey it conducted jointly with the Bureau of the Census and Dept. of Commerce showing that '57 shipments of key nuclear equipment produced in privately owned plants totaled about \$100 million. Comparison of actual '57 sales with estimated '61 sales in specific categories (from Atomic Industrial Forum survey reports; *CW*, March 15, '58, p. 63) shows that sales volumes of heat exchangers, pumps and valves are already more than halfway to maximum goals. Furthest along: instrumentation, with '57 sales of \$9.5 million topping the \$7.5-million maximum forecast for '61.

Signs of corporate belt-tightening by engineering firms indicate

that the pickup in construction projects in the CPI may be slower than the companies hopefully predicted (*CW*, Jan. 24, p. 68). Macco Corp. (Los Angeles) is reportedly preparing to shut down its refinery and chemicals division when its present contracts in this field are closed out by the end of April. But the company isn't abandoning its chemical and refinery engineering operations altogether, will continue to handle this business through other Macco divisions.

Cheaper fresh water from the sea is promised by Griscom-Russell

Co. The company says it can now guarantee water at less than 85¢/1,000 gal. from a 2-million-gal./day plant, using its flash distillation process. (The company credits by-product electric power conservatively by deducting the fuel cost for an equivalent power plant.) Griscom-Russell's figure appears to be well below the estimated cost of "less than \$1/1,000 gal." that the U.S. Interior Dept. hopes to attain in its first million-gallons/day demonstration plant (*CW*, March 14, p. 29).

Cost of fresh water from a 2.5-million-gal./day flash distillation plant built by Westinghouse in Kuwait is about 63¢/1,000 gal., a low cost due to inexpensive fuel in the oil-rich area (see also *Washington Newsletter*, p. 27). And a 2.7-million-gal./day plant on the island of Aruba—engineered by Singmaster & Breyer and using the submerged-tube process of G. & J. Weir (Glasgow, Scotland)—is producing fresh water for \$1.75/-1,000 gal., as well as by-product electricity.

Heyden Newport has turned up a new synthetic lubricant for use

in high-temperature jet engines. A neopentyl glycol ester fortified with an antioxidant, the lubricant is designed to meet the requirements of U.S. Air Force target specification MIL-L-9236 A (*CW*, Dec. 20, '58, p. 35). Celanese unveiled an ester lubricant earlier this year (*CW Technology Newsletter*, Feb. 21) that is now in an advanced stage of engine-testing.

A new gasoline-upgrading technique—the Molex process—was unveiled last week by Universal Oil Products (Des Plaines, Ill.) at the Western Petroleum Refiners Assn. in San Antonio, Tex. The process

Technology

Newsletter

(Continued)

utilizes molecular sieves to remove normal paraffins that can't be separated economically, if at all, by fractionation. Result: octane rating is boosted without the attendant increase in sensitivity that occurs when aromatics are added to raise octane number.

Molex treatment of reformates produces substantial quantities of normal paraffins, heptane and heavier, that can be recycled to the reformer to boost over-all yield of gasoline. But UOP predicts that the unique properties of these straight-chain products—they're easily cracked, have higher heat of combustion per pound than do other hydrocarbons—will ultimately lead to their wide-scale use in such processes as the synthesis of straight-chain organics and the manufacture of jet or missile fuels.

The National Science Foundation will spend \$1.13 million in fiscal '59 for research on weather modification. Included: a \$114,300 grant to two University of Chicago Dept. of Meteorology researchers for a study of "physical effects of silver iodide seeding in the Great Plains."

As a virucidal agent, beta-propiolactone (BPL) has chalked up a good record in studies reported at last week's meeting in New York of the New York Academy of Sciences, section of Biological and Medical Sciences. Gerald LoGrippo, of the division of microbiology, Henry Ford Hospital (Detroit, Mich.), reports that over an eight-year period BPL has shown "unique" effectiveness in sterilizing plasma, etc.

Conquering rose mites—spidery pests that tend to develop resistance to organic miticides—is now being accomplished by using a new silica gel and magnesium fluosilicate combination made by Grace's Davison Chemical Division. It's called Dri-Die Horticultural Dust 91, has just been o.k.'d by the U.S. Dept. of Agriculture for large-scale testing.

Davison Chemical's entry into molecular sieve competition (*CW Technology Newsletter*, Nov. 29, '58) will likely arrive next month. The company told *CW* this week that it's now readying pilot production facilities to turn out initial products for field evaluation within the next two weeks. It also confirmed trade reports that it has been talking a selling price of approximately 75¢/lb. (about half the going cost of molecular sieves), with further cost reductions of as much as 20% "foreseeable with volume production."

Linde is odds-on favorite to get NASA's liquid hydrogen contract (see p. 23). As low bidder, it is being recommended for the job; official announcement that it has been awarded the contract may come within a matter of days. It is not clear exactly where the plant will be built. Presumably it will be at Torrance, Calif. Linde has said in its bid that it can start delivery a year from the date of contract award. The price of liquid hydrogen will be based on a sliding scale, depending on the quantity NASA takes.

How to Use the Radioisotopic Derivative Method in Quantitative Analysis

1. The principle is necessary of a substance analytical method because the amount of substance present which is isotopically diluted because it is a desired component or because the fault.

2. The solution is converted into a reaction with a reagent which can now apply the described method of amount of component.

3. How to radiate

There is a wide variety of active reagents which are commercially available. They are used with all (or no) compound, as reasonably satisfying.

Application

Radioisotopic analysis is applicable to the measurement of degree of uniformity of a mixture. Industries require a mixing step in their manufacturing process, and it is necessary to be sure that a mixing step will produce a uniform mixture. The basic principle of some mixing systems are not completely known, and these can be improved by rate-of-mixing which will eventually result in better performance. In some processes, the degree of mixing is not desired, and it is necessary to estimate the degree of mixing to reproduce the mixed portion.

Principle

Tag one of the components of a mixture with a radioactive compound, then measure the radioactivity.

For more than 12 years, Nuclear-Chicago has been the foremost manufacturer of instruments for measuring and recording radioactivity.

In the past few months Nuclear-Chicago has distributed thousands of copies of these Technical Bulletins describing the analytical use of radioisotopes. If you have not received them, just check and mail the coupon. New Technical Bulletins are now being prepared and will be issued periodically. If you will check the coupon accordingly we'll be glad to see that the new Bulletins will be sent you regularly as published.

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CORPORATION
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these bulletins
on the analytical use of
radioisotopes are
yours for the asking

How to Use Radioisotopic Analysis for Mixing Evaluation

TECHNICAL BULLETIN NO. 2

How to Use Radioisotopic Yield Determination in Quantitative Analysis

Application: Radioisotopic yield determination is of particular utility in solving tough analytical problems in which quantitative separation of the desired material ('A') is difficult, time-consuming, or impossible because of certain interfering materials in the crude sample. In removing these interfering materials, an unknown and variable amount of the sought compound may be lost. Radioisotopic yield determination tells how much of the sought compound was lost in purification, and thus provides a correction factor which is the missing link in the analysis. Yield determination by the use of radioisotopes is simple, inexpensive, and precise. It can be used for any analysis in which a radioactive constituent is available. Since hundreds of radioactive compounds and elements are readily available from commercial suppliers.

immediate application of the technique can be made. Only infinitesimal amounts of radioactivity need be used.

Principle: Before removing the interfering substances and applying a regular analytical procedure, add a minute amount of radioactive compound A to the crude sample. The yield of radioactivity in the final sample indicates how much compound A was lost in the purification procedure. This information permits correction back to the amount initially present.

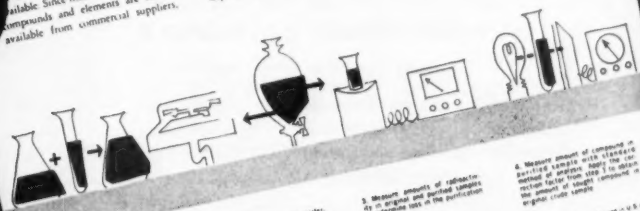
Procedure:

A. Add a minute amount of radioactive A to the unknown sample. The amount of radioactivity required depends on the yield in the purification.

step. An activity of 1000 counts/minute ('cpm') is convenient for the final sample. Thus, a yield of 10% would require an initial investment of 10,000 cpm.

B. Apply the purification step. It is not necessary to end up with pure compound A. All that is needed is a mixture to which an ordinary quantitative analytical method for determining A can be applied. Only substances interfering with the analytical method need be removed. For small amounts of material, chromatography, solvent partition and sublimation are probably best suited.

C. Measure the amounts of radioactivity in the original and purified samples. β -Emitters (H^3 , C^{14} , P^{32} , S^{35} , etc.) are usually spread out in a thin uniform



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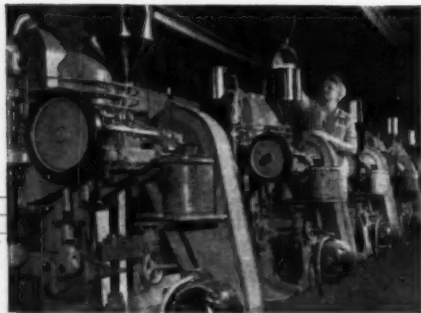
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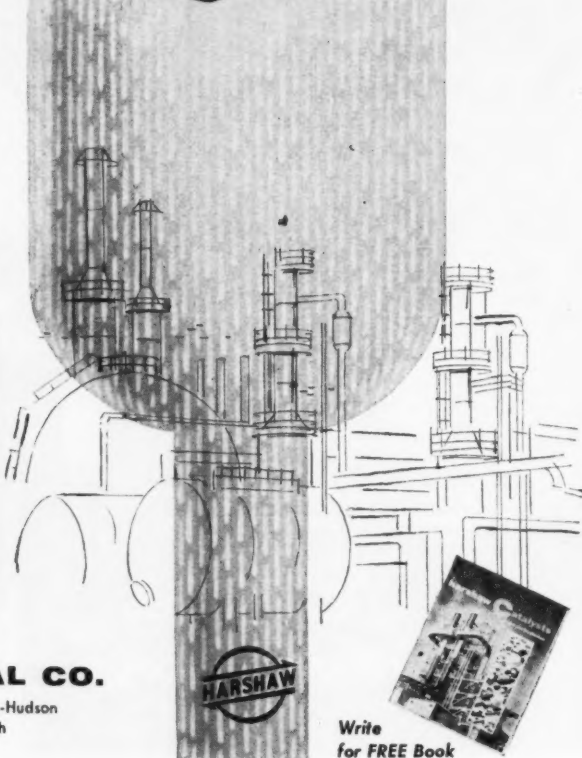
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PRODUCTION



Homestake Sapin Partners uranium mill looks like others from outside; the difference is inside.

Automation Comes to Uranium Processing

The new Homestake Sapin Partners uranium mill near Grants, N.M., pictured above, looks like many others, from the outside. The difference is in the amount of instrumentation and automatic controls within—and Homestake claims a higher level than has ever been achieved before. This week, other uranium processors have a chance to make comparisons.

For other chemical process industries companies, the Homestake mill is an example of how conventional, standard instruments can be applied to a relatively new process with rugged demands.

When Homestake set out to apply automatic process control, it found there was no simple, clear-cut approach. Reasons: the industry's new-

ness and the large number of process variables that exist. For example, Homestake uses a sodium carbonate-sodium bicarbonate leach process. Other mills, with different types of ores, use an acid leach. And in effecting the liquid-solid separation, processes such as filtration, countercurrent decantation, resin-in-pulp and solvent extraction may be used.

Dependability: Homestake's initial problem was to find instruments that could operate in a slurry containing ground sandstone. (The host rock is a sandstone that contains about 85% silicon dioxide.) The instruments had to be rugged. And they had to be located in spots where abrasion and corrosion could be kept to a minimum, at the same time provide signals

and control that were dependable—considerations that are often difficult to reconcile. One of the main reasons why Vitro Uranium Co. switched from a phosphate precipitation to a solvent extraction process: the all-liquid process permitted efficient operation within narrow control limits, resulted in savings through automation (*CW*, March 1, '58, p. 60).

But Utah Construction Co., designers and builders of the mill, provided automatic controls for Homestake's precipitation process that permit mill operation with a minimum labor force. Nine operators and one supervisor control the nine processing areas of the 1,500-tons/day plant.

Central, integrated control panels permit automatic control of seven of

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PRODUCTION

the processing areas — crushing; sampling; grinding and classification; thickening and digestion; thickening and filtration; steam generation and recarbonation; and precipitation, drying and packaging.

The other areas — reagent preparation, storage and feeding; and power generation — have no central control panels because of complexity. But automatic controls are used where possible.

Cutting Out Samples: Few automation possibilities have been passed over. Automatic sampling, following initial crushing and screening of the ore, obtains more uniform, representative samples than could be obtained by hand. A Galigher Co. sampler cuts out 10% of sampler feed, which is pneumatically controlled and adjusted to the plant's ore-feed rate. And the weight of the sample cut is continuously recorded.

The crushed ore is automatically weighed and fed to ball mills by two belt scales equipped with Reeves Varispeed drives. The controls are arranged for blending of ores from different bins.

The ground ore is classified in the sodium carbonate-sodium bicarbonate mill solution, which is controlled by a float valve in a steady-head tank in the grinding area. Particle size is controlled by setting overflow weirs for a predetermined density.

The overflow is pumped through a heat exchanger (where it is warmed by waste heat from the digesters) into thickeners, where density is adjusted before feeding to the digesters. The thickeners are equipped with torque indicators, which automatically sound a warning when the load on the drive reaches a preset point, cut off the drive if the load reaches the point where it might damage the drive.

Density changes of the feed to the digesters are determined by changes in the static head of a constant-height column of slurry. Changes are registered by a diaphragm-pressure transmitter at the base of the column and corrections in diluting-solution additions are made automatically.

Digestion: The digester circuits consist of eight vertical autoclaves in series, each digester stepped down 6 in. below the one preceding it. Pulp level in the final digester controls the discharge rate to the heat exchanger for waste-heat recovery before filtra-

tion. The rate of air introduction (for oxidation of quadrivalent uranium to hexavalent) and pressure in the system, along with heat additions (to accelerate extraction of the uranium from the ore) are automatically controlled. And, since the shift foreman spends most of his time in the digester building, all grinding equipment and digestion equipment can, in an emergency, be stopped from the digester control panel.

Before feeding the digested pulp to the vacuum drum filters, pulp density is adjusted in thickeners. (The filters are extremely sensitive to density and feed-level of the pulp.) The overflow from thickeners is pumped to the precipitation area; the underflow is pumped to the filters. The filter system consists of three stages—each comprising five Peterson continuous filters — with repulpers and agitated sumps between stages.

Filter cake from the filter banks is repulped with sufficient solution to permit gravity flow to the sumps. And densities are adjusted automatically after each stage by measuring the change in static head of a constant-height column of slurry as is done before digestion (see above).

Pulp levels in the filters are measured by a bubble-tube arrangement. A time-controlled automatic purge system cleans the bubble tubes. And, in the second and third banks of filters, the feed is proportioned automatically, on demand, to individual filters. The automatic controls enable the precoat filter, 15 vacuum filters, three vacuum pumps, two boilers and auxiliaries to be operated by three men per shift.

In the precipitation stage, the uranium in the clarified solution that overflows the thickeners following the digestion stage, is precipitated as sodium diuranate (yellow cake) through use of a 50% solution of sodium hydroxide. The caustic flow rate is maintained automatically. The yellow cake from the thickeners is filtered in a system similar to that described above.

Early Start: The ore drying installation is an example of the planning carried out during the early stages of the project. The mill was actually designed and partly built before any mine shafts had penetrated to the 750-ft. depth of the ore zones. But plans were laid for the probability

that the ore bodies would be wet. A dryer installation with Stearns Roger rotary dryer was provided and completely instrumented and automated so that additional operators would not be required if ore drying proved necessary. The Coen Co., which supplied the air heater, and Taylor Instruments, which made most of the instruments used throughout the plant, coordinated work on the heater controls.

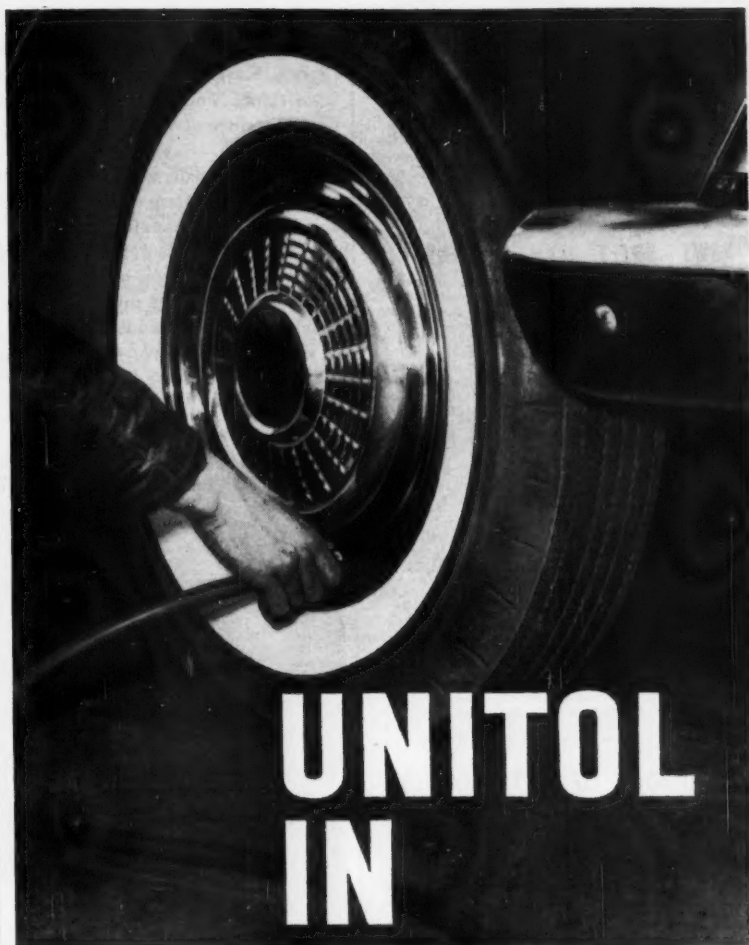
EQUIPMENT

Effluent Sampler: A compact, continuous-stream sampler for pollution checking is a new offering by Brailsford & Co., Inc. (670 Milton Rd., Rye, N.Y.). The instrument draws a sample at the rate of 2 gal./24 hours; self-priming sampling pump provides 10-ft. suction head. All electrical components are explosionproof; motor will operate continuously three to four months on three No. 6 dry cells. Unit is 9x12x18 in., weighs 20 lbs. with batteries.

Air Filters: Two new air filters are available from two manufacturers. The Ultra-Aire Space Filter, made by Mine Safety Appliances Co. (Pittsburgh) was developed for protection from radioactive materials. The filter removes 0.3-micron particles with 99.97% efficiency, will operate in air streams with 100% relative humidity. Dust penetration through filters: 0.03% maximum; mean pressure drop: 0.85 in. of water. Unit comes in 35-, 50-, 500- and 1,000-cfm. sizes. Standard plywood frames allow use to 250 F, treated plywood to 350 F, and steel to 1,000 F.

B/T Pure-Air Filter, made by Arco Mfg. Corp. (542 West 55th St., New York 19) has a parabolic-shaped disposable bag said to provide greater air-cleaning efficiency in air-conditioning, heating and ventilating systems. Shape of the bag causes air to travel through its sides at an angle, through a greater thickness of filter material.

Disposable Work Clothes: The Ace High Division of Williamson-Dickie Mfg. Co. (509 West Vickery Blvd., Fort Worth 1) is now supplying a full line of disposable protective clothes, including laboratory and shop coats, jackets, two-piece coveralls and aprons. Clothes are made of Kimberly-



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HANDBOOK OF PROBABILITY AND STATISTICS WITH TABLES

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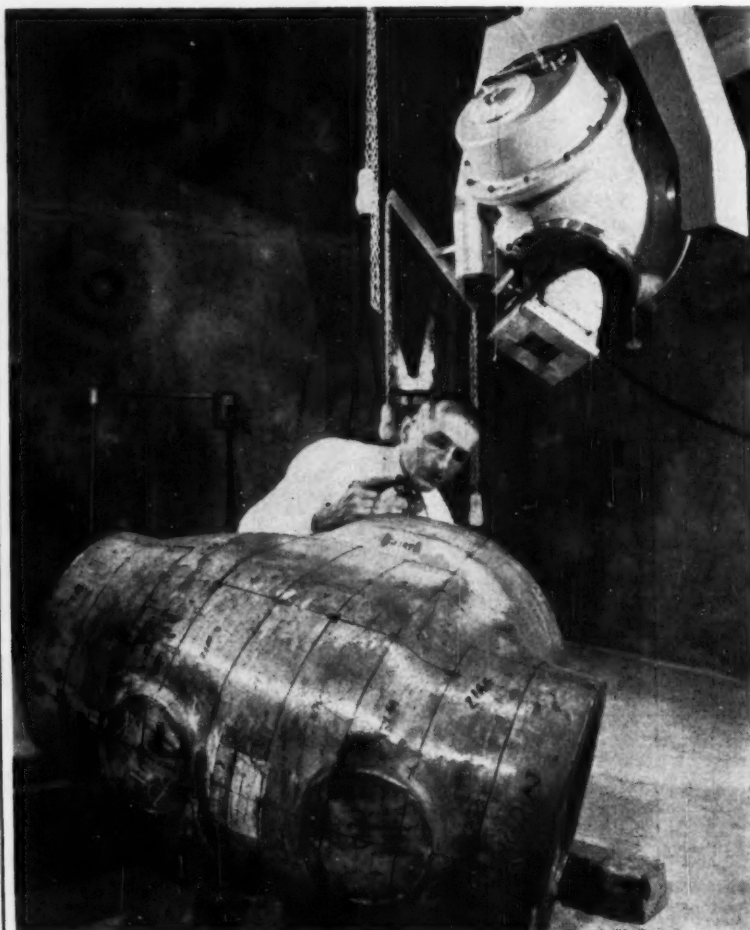
Vibrating Feeders: New equipment for vibratory feeding of solids is available from three manufacturers:

- Eriez Mfg. Co. (Erie 6, Pa.) is out with a 50-tons/hour unit for heavy materials that must be spread, dried, agitated or handled hot.

- Carrier Conveyor Corp. (Louis-

ville, Ky.) offers a new mechanical-vibrating feeder with a pneumatic-control system to change the rate of vibration. Feeder uses 50-psi. air, but only during rate changes. Air springs provide vibration.

- Martin Engineering Co. (Neponset, Ill.) is manufacturing a new vibration inducer for unloading large hoppers and bins. The unit is portable, can be clamped to equipment at any angle, is operated by low-pressure air.



Readying a Radioactive Shot

Cyclops, largest-capacity radioisotope machine installed for industrial use in the U.S., is being readied for a shot of a heavy stainless steel casting by John Leask, industrial sales manager of Picker X-Ray Corp. (White Plains, N.Y.), manufacturer of the unit. Installed at Cooper Alloy

Corp. (Hillside, N.J.), the new testing machine has a capacity of up to 1,500 curies of cobalt-60—the equivalent of a 2-3-million-volt X-ray machine. It will be used to examine heavy castings for internal flaws, can "shoot" thicknesses up to 12 in. Cost is \$20,000-25,000.



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"'Call for vitamin C,' he'll say, and we'll send him around to supermarkets and stores," rejoindered O'Reilly, jumping up and down on his soap box. "And we'll buy our vitamin C from Pfizer. They're veterans in vitamins. With their help we'll fortify all our soft drinks, build a vitamin C program with a platform to please everyone."

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Organic halide (as <u>n</u> -butyl chloride)	0.50%

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	Li	Mineral Oil	Petrolatum	Oleic Acid
1.	30	69.0	—	1.0
2.	30	61.0	8	1.0
3.	30	—	70	—
4.	15	65.0	20	—

USES

- Catalysis of the polymerization of isoprene to a synthetic rubber closely resembling natural rubber
- Preparation of alkyls and aryls in organic synthesis

PARTICLE SIZE—Over 90% less than 25 microns

PURITY—Prepared from 99.81% pure lithium metal

AVAILABILITY—*Experimental quantities for immediate delivery*

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Market Newsletter

CHEMICAL WEEK

March 28, 1959

Proposed U.S. purchase of plutonium from England is attacked

by Administration opponents—headed by Sen. Clinton Anderson (D., N.M.)—because of alleged excessive costs and the threat of hidden subsidies for U.S. producers. The Atomic Energy Commission hopes to buy Britain's "weapons plutonium" at \$30/gram, about double the going \$14-16/gram price of nonweapons material. This, complains Anderson, would unnecessarily inflate the government's plutonium bill by more than \$175 million.

Moreover, adds Anderson, foreigners might believe the U.S. is interested mostly in military rather than atoms-for-peace uses, and that the Administration would later rely on the high-priced foreign purchases as precedent to pay U.S. reactor owners the weapons price for plutonium produced here.

The plutonium problem is part of the behind-the-scenes hassle

as Congress tries to hammer out a compromise civilian atomic power program that vitally affects many major firms in the CPI (see p. 30). Publicly, AEC officials are slow to rebut Anderson's attacks—partly because the whole plutonium subject is highly classified.

But the explosive public-versus-private power controversy is a key part of the atomic energy muddle. Reason: a reactor that produces plutonium can also generate considerable quantities of electric power—which would be public power because a plutonium producer is likely always to be government-owned. It's a situation obviously distasteful to the Administration as well as to private power interests. On the other hand, AEC is currently trying to convince the joint committee that the plutonium-producing reactor authorized by Congress last year need not be convertible to electric power as the legislation specifies.

Stauffer Chemical is protesting President Eisenhower's decision

to overrule the Tariff Commission's recommendation for protective tariffs on imported tartaric acid and cream of tartar (*CW Washington Newsletter*, March 21). In a strongly worded telegram to the President, Stauffer last week underscored Eisenhower's "irrelevant" reason for the veto (i.e., tartar chemicals represent only a small part of Stauffer's total business) and stated that this is not a proper test by which the escape clause should be evaluated. "The direct result of your decision," the telegram said, "will be to eliminate the last remaining source of tartar chemicals and will place all U.S. consumers at the mercy of foreign producers."

Cessation of tartrate production by Stauffer won't necessarily

mean the firm will jettison its tartrate customers. They are now being supplied from previously built-up stock. But there's also the chance—neither confirmed nor denied—that Stauffer may handle imported materials rather than give up its well-established tartrate markets. Right now

Market Newsletter

(Continued)

much of the foreign material—which originates primarily in Italy and Spain—is being brought here by Pfizer.

U.S. Industrial Chemicals will soon boost polyethylene output to a brisk 175-million-lbs./year rate. It has begun full production at its spanking-new 75-million-lbs./year plant at Houston, Tex. The new units supplement USI's 100-million-lbs./year plant at Tuscola, Ill.

The firm's total polyethylene capacity will climb to about 250 million lbs./year of high-pressure material by late '60 (*CW*, March 14, p. 25) when a capacity-doubling of the new Houston plant is completed.

Incidentally, some trade reports may have exaggerated the overall U.S. polyethylene demand picture on the basis of USI's report that the Houston plant was rushed into production some two months ahead of schedule to meet customer needs. USI says call for its resin began to outrun supply in late '58. Although indicative of the general well-being of the U.S. polyethylene market, USI's happy situation isn't necessarily shared completely by all other producers.

Wyandotte Chemicals' ethylene oxide-glycol plant has been rebuilt, is now operating. The \$11-million, 60-million-lbs./year-capacity Geismar, La., plant went onstream in June '58, was damaged last fall by fire and explosion (*CW*, Dec. 6, '58, p. 42). Wyandotte reports that its investigations reveal the "basic manufacturing process to be sound"; it says the plant is safe to operate as a result of technical improvements and intensive training of operating personnel.


Incidentally, the first half of a plant at the Geismar complex to make 300 tons of chlorine, 330 tons of caustic soda will go onstream soon; completion is expected later in '59.

Silicon for semiconductor uses will be produced at the Bradford, Pa., plant of Alleghany Electronic Chemicals Co. The new firm—subsidiary of The Baugh Chemical Co. and Baugh and Sons (Baltimore)—was organized to provide a single source of different forms of silicon used by the electronics industry (*CW*, July 27, '57, p. 34).

SELECTED PRICE CHANGES — WEEK ENDING MARCH 23, 1959

	Change	New Price
UP		
Castor oil, imp., No. 1, Brazilian, tanks	\$0.0025	\$ 0.1525
Mercury, metal, 76-lbs. flask	6.00	224.00
Olive oil, edible, dms., gal.	0.05	2.25
DOWN		
Copra, Atl., Gulf ports, c.i.f. ton	\$2.50	\$270.00
Soybean oil, crude, tanks	0.0025	0.0925
Tetrahydrofurfuryl alcohol, dms., c.l., t.l., Memphis, Tenn.	0.03	0.315
Vitamin B ₁₂ , cryst., USP, 1-50 gms., vials, tins, gm.	24.00	139.00

All prices per pound unless quantity is quoted.



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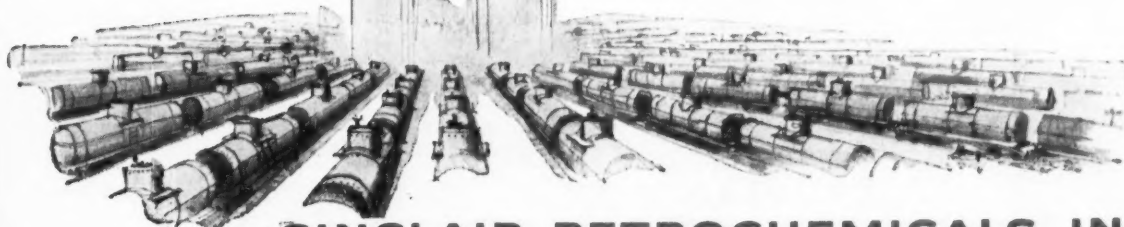
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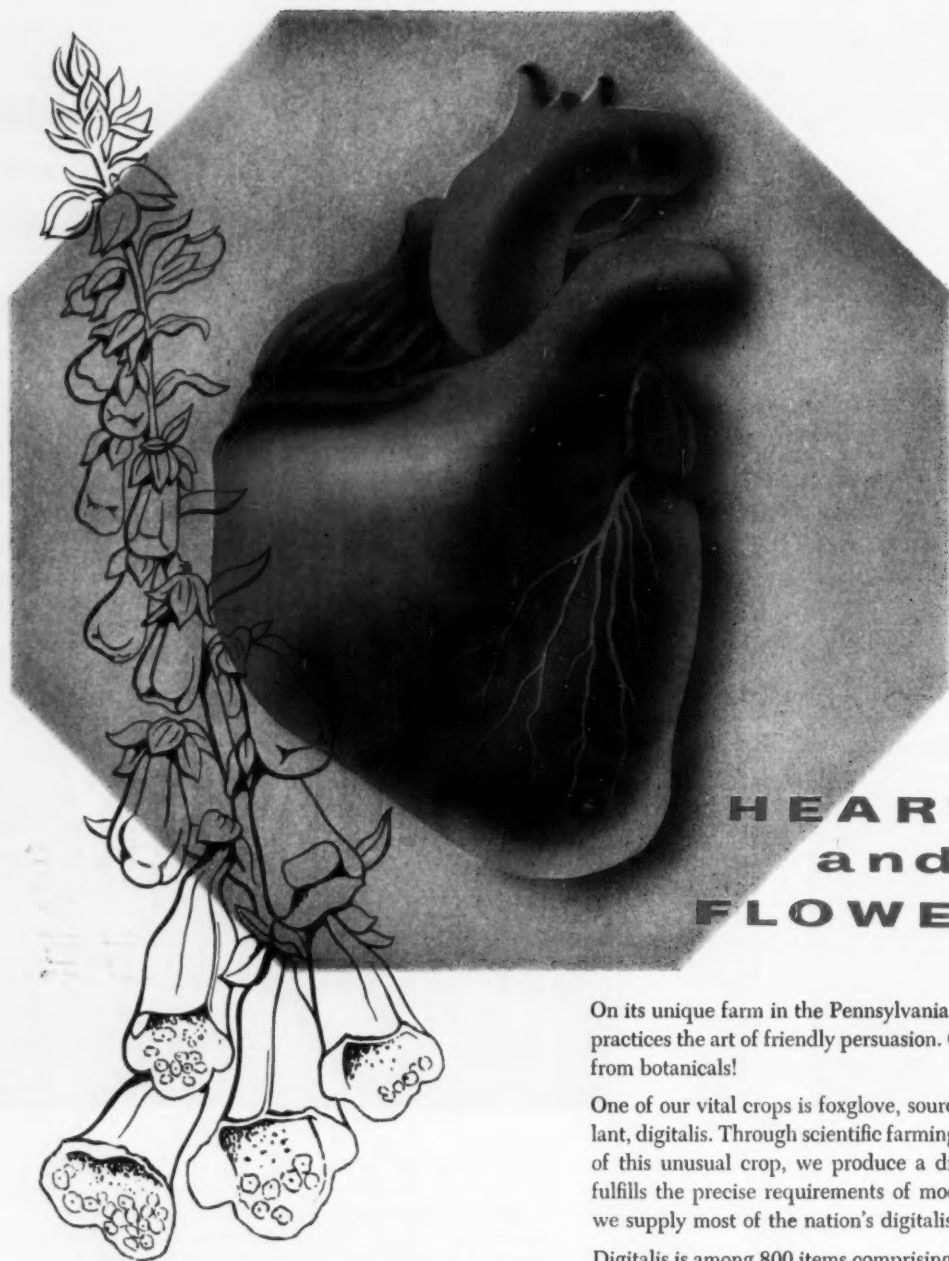
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SPECIALTIES

Product Certification Checks In Again

Last week, the American Hotel Assn. put in an additional print order for 5,000 copies of its recently issued 16-page certified products list. The listing consists of specialty maintenance items ranging from abrasive cleaners to silver polishes and it's designed as a buyers' guide for the association's 4,000 members. The new product listing marks the defeat of AHA's efforts to get away from specific products listings.

AHA had nursed hopes that by working with the American Standards Assn. (which would bring together interested groups from industry, consumer groups, and trade associations) it would be possible to set up minimum standards for the various cleaning specialties (*CW*, Oct. 27, '56, p. 47). In that way a manufacturer's product would not have to go on any list by brandname. It would simply be necessary to state that the product met specifications. ASA has successfully set standards for other industries, but it has so far failed to get cleaning specialties manufacturers, users and laboratories to agree on minimum standards.

What probably contributed most to the lack of rapport between the various groups called together by the standards group was the stand taken by the Soap and Glycerine Mfrs. Assn., according to observers.

With the failure of the interested parties to reach agreement on what constituted minimum standards, the hotel association reluctantly went to a program of product testing (at the manufacturer's expense) by Foster D. Snell.† If a product meets the performance requirements set up by Snell, it goes into the certified list.*

Besides going to the 4,000 member hotels of AHA, the certified products list is used by the American Hospital Assn., the National Institute of Governmental Purchasing, the National Assn. of State Purchasing Officials, the National Assn. of Educational Buyers and the Hospital Bureau of Standards and Supplies. Since late February, some 12,000 copies of the listing have been distributed.

A lot of unhappiness has been created among specialty manufacturers and their own association (The Chemical Specialties Mfg. Assn.—CSMA) by the listing. Here's what some of the dissenters had to say about the issuing of the list:

†Some fees charged by Snell for product testing: abrasive cleaners, \$30; furniture polish, \$30; paints, \$85; silver polish, \$70; carpet and rug cleaner, \$125; upholstery cleaner, \$35; glass cleaner, \$40; floor polish, \$100.

*The '59 certified products list covers the following items: abrasive cleaners, bowl cleaners; carpet and rug cleaners, dishwashing compounds, floor cleaners, floor polishes, furniture polishes, general-purpose cleaners, glass cleaners, metal polishes, mothproofing compounds, paints, porcelain cleaners, silver polishes, upholstery cleaners.

• Leo Kelly, vice-president of the National Sanitary Supply Assn., sees no reason why AHA should require testing for products any more than "guests should be allowed to test beds in hotels before checking in." He told *CW*, "The American Hotel Assn. is doing a disservice to its members in running such a service."

• H. W. Hamilton, CSMA secretary, said his group had gone on record at its last meeting as being against all product certification lists. According to Hamilton, getting on a certified products list "can be costly to the manufacturer and doesn't fulfill the function it's designed for. Why add expense for no value?"

Other objections raised against the certification of products were voiced by manufacturers. A large wax maker contended that "a buyer who won't buy on a manufacturer's reputation shouldn't buy at all." A manufacturer of industrial cleaning supplies complained of the expense involved in the testing, and a large soap company representative said that his company thinks it is not worthwhile to pay for other than its own product testing "which is extensive enough to bear out any statements we may make about a product's quality."

Others thought that a certified product listing tends to hold down product improvement—"you formu-

AHA's Fasset: 'They (minimum standards) put a floor under quality . . .

. . . won't keep out the good products . . .

. . . but will protect our members against the bad ones."

CW PHOTOS—EDWARD WALLOWITCH





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SPECIALTIES

late a product to just pass the specs and you're on the list along with others with much better products who have to sell their higher-priced material in competition with you." Some manufacturers thought the lists would invite skulduggery such as the substitution of a "gilt-edged product"—or even the submitting of a competitor's product—as the sample to be tested.

CW went to Jake Fassett, AHA's director of research and services, to find out how AHA reacted to these complaints—particularly since it had given considerable play to its plan to switch to standards. Asked, "Why bother with a list?" Fassett said that of the 18,000 requests his organization gets for information each year, over half concern some aspect of housekeeping. Though ASA used to test products without charging its members, the call on its budget for other services has curtailed what it could spend for this testing. It has been forced to ask the manufacturer to foot the expense of the product testing.

Fassett thinks that no legitimate product is going to be hurt by the certification. "Snell tests to minimum performance requirements," he told CW. "They put a floor under quality, won't keep out the good products but will protect our members against bad ones."

As for a manufacturer substituting a "gilt-edged product" for his own, Fassett points out that the manufacturer sends an affidavit with his sample, declaring that "the sample shipped to Foster D. Snell truly represents the product as sold to hotels and has been selected at random from stock."

And as for trusting to the manufacturer's reputation to sell a product, Fassett said that "the manufacturer talks on the one hand about the honesty of his industry, then turns around and tells me how our listing will be exploited by unscrupulous people in that industry."

On this point Fassett echoes the work of a specialty maker who told CW that AHA's listing was the result of specialty makers' not policing their industry better.

The product listing will continue to be issued yearly, according to Fassett, until the ASA standards can be set up (hope for this hasn't been

abandoned). This year's listing should be vastly expanded as industry becomes aware of the list's existence—it's the first one issued since '55—and AHA is making an effort to see that all interested parties hear of it in time to submit samples for the '60 list.

Present plans call for retesting a product about every two or three years. It won't be necessary to retest each year—the manufacturer will simply have to sign an affidavit that the product is still the same as it was when originally approved.

Many manufacturers see the controversy about certified products as unwarranted. Nevertheless, a healthy proportion of the \$7-9 million spent each year by AHA's member hotels for cleaning specialties will certainly go for items on the listing. If nothing else, the list gives a purchaser of those items a crutch to lean on in case something goes wrong. He can pass the buck to the product listing.

Fearful that there may be a trend to this sort of certified product listing, specialty makers will watch closely to see the effect on their sales of AHA's approval. Depending on whether it proves a good sales tool or a handicap to listed manufacturers, AHA's ratings should be in for a fair share of abuse or praise in the next year.

PRODUCTS

Ultraviolet Barrier: Tinuvin P is the name of a new ultraviolet barrier for plastics that has been introduced by Geigy Co. It's generally used at a concentration between 0.01 and 1%, according to the polymer and the use to which it is put.

Gelling Agent: American Cyanamid has introduced a new gelling agent, Cyanogum 41. It's available as a dry white powder, can gel solutions containing a wide variety of materials such as clay, charcoal, sawdust and cement-sand mixtures.

First for New Firm: Hoyt Pharmaceutical Corp. (215 California St., Newton, Mass.), a newly organized pharmaceutical specialty manufacturer, has just introduced its first product, Pro-Blem, an acne medicament. The clear solution contains 70% isopropyl alcohol, 0.1% hexachlorophene

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SPECIALTIES

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Fabric Saver: Emkatex NTA, a protective colloid claimed to minimize fabrics care during the acid removal of antireseal resins, is the latest product of Emkay Chemical (319 Second St., Elizabeth, N.J.). The material is applied just before the addition of muriatic acid. It is packaged in 450-lb. drums.

General-Purpose Surfactant: Dow Chemical (Midland, Mich.) is now pushing a new anionic surfactant, Dowfax 2A1. It is a sulfonated alkyl diphenyl oxide, sells for 60¢/lb. (active content 90%) in spray-dried form, 18¢/lb. for solutions (45% active content). The material is said to have unusual solubility and stability.

Synthetic Elastomer: Minnesota Mining & Manufacturing (St. Paul) has developed a new highly fluorinated synthetic elastomer, called Fluor-el. It is designed for use at +400 F, resists such fluids as diester, silicate ester, 90% hydrogen peroxide and red fuming nitric acid. It sells for \$15/lb., is available in 1-, 5- and 10-lb. units.

Polyethylene Wax: Eastman Chemical Products Inc. (Kingsport, Tenn.) has added a new, low-molecular-weight polyethylene wax to its Epolene line. It's tradenamed Epolene LV, was developed primarily as a modifier for paraffin, as an additive for rubber and plastics and as a polish ingredient. Density is 0.925, ring and ball softening point 103-104 C. It sells at 30¢/lb., car-load quantities.

Ungummy Fingers: Behr-Manning Co. (Watervliet, N.Y.) has come up with a new process for making an easy-to-unroll adhesive tape. According to Behr-Manning, the new manufacturing process permits pressure-sensitive tape to be unwound more readily without reducing its adhesion to surfaces.

Golden Deal: Bart Manufacturing Corp. (Belleville, N.J.) is offering a new gold-plating solution called Bart-alloy-P. According to Bart, the new alloy produces a deposit equivalent to 18K gold, superior color and a hardness range of 300-450 Vhn.



Who Discovers the Discoverers?

"A professor can never better distinguish himself in his work than by encouraging a clever pupil, for the true discoverers are among them, as comets amongst the stars." CARL LINNAEUS

Somewhere in this mighty land of ours, a gifted youth is learning to see the light of tomorrow. Somewhere, in a college classroom or laboratory, a dedicated teacher is gently leading genius toward goals of lofty attainment. Somewhere the mind of a future discoverer—in science, engineering, government, or the arts—is being trained to transcend the commonplace.

Our nation has been richly rewarded by the quality of thought nurtured in our colleges and universities. The caliber of learning generated there has been responsible in no small part for our American way of life. To our college teachers, the selfless men and women

who inspire our priceless human resources, we owe more than we will ever be able to repay.

Yet how are we actually treating these dedicated people? Today low salaries are not only driving gifted teachers into other fields, but are steadily reducing the number of qualified people who choose college teaching as a career. At the same time, classrooms are beginning to get overcrowded. In the face of this, college applications are expected to double by 1967.

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NaH PRODUCTION

HITS NEW HIGH — production quantities of sodium hydride are now available from stock. This is important news to all chemical processors whose process includes any reaction requiring a strong base as a reagent.

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EXPANDED — and output of this alumino hydride has been doubled. This expansion is MHI's answer to steadily increasing demand from pharmaceutical houses using LAH for hormone synthesis, vitamin preparations and like products.

FOR HYDRIDES!

New applications broaden the picture . . . excite interest in many fields Technological advances in a variety of dynamic fields are being based on the unique advantages of hydride chemistry. Typical of these are the five new applications reviewed briefly below:

HIGH-ENERGY FUELS — sixteen of MHI's hydride products are of growing importance in the field of missiles technology, particularly in fuels. Chief among these is sodium borohydride now being produced in volume by MHI for use as an intermediate in the preparation of high-energy fuel.

TEXTILES — the borohydrides are textile processing newcomers, yet their reducing properties have sparked significant interest in the field. Specific reactions include reductions of aldehydes and ketones, of carbonyl impurities in cellulose, of dyes, of the disulfide linkage in cystine, and reactions with oxidizing agents.

DIBORANE GENERATION — in nonaqueous systems the borohydrides react with a boron halide to generate diborane. Research has disclosed a new process for the addition of diborane to olefins and other unsaturated compounds. Boron alkyls are formed quickly and in high yields. Diborane and boron alkyls have been used in catalyst systems to polymerize many monomers, and to isomerize internal olefins to alpha olefins.

SYSTEM CLEANUP — with either sodium or potassium borohydride it is possible to "clean up" minor amounts of unwanted aldehyde, ketone, or peroxide contaminants. One highlight application is the recently patented use* as an agent to destroy color forming impurities in oxo-alcohols.

*U. S. Patent—2,867,651.
Standard Oil Co. (Ind.)

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MHI RESEARCH SERVICES ADVANCE TECHNOLOGY — through its own and contract research work — which is welcomed — MHI is devoting greater resources than ever before toward the development of hydride chemistry in many fields.

TECHNICAL SERVICE, NEW LITERATURE — MHI welcomes you to write or call for qualified Technical Service assistance in applying hydride chemistry to your process, or for discussing MHI contract research services.

Have you received your copies of these recent MHI literature releases? If not, they are available upon request.

1. Selective Reductions of Organic Compounds With Complex Metal Hydrides

2. Sodium Borohydride — Potassium Borohydride — A Manual of Techniques



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ADMINISTRATION

Facts, Finesse Win With Wall Street

Industrial management, largely as a result of the urgent need during the past decade for new money to finance record expansion, has learned a lesson about investors: you must keep them informed of your company's progress, if you want new capital on favorable terms. One way to do this is by putting on an informative "show" for security analysts. Pictured (right) is the presentation a few weeks ago by Merck's John Connor before the New York Society of Security Analysts. Last week, Dow's Leland Doan and several of his top executives presented a similar program to the same group.

Ten years ago, corporate management was reluctant to appear before financial analysts. Now, five to 10 firms each week ask for the chance to talk before one of the 22 separate analyst groups in the U.S. To find out more about the growing preference for group contact with the financial community, to determine what makes a good presentation before such a group, *CW* last week discussed the subject with both the audience—security analysts—and the performers—corporate executives. One fact stood out from the interviews: to get maximum benefit from an appearance before an analyst group, management should follow certain preferred and proved procedures.

Chief Executive Preferred: Analysts don't hesitate to say they prefer to have a company's chief executive address their groups. Most companies, however, rotate such appearances among their top executives. Merck & Co., for example—whose presentation featured slides and a printed brochure, rated a nod of approval from attending financial analysts—uses its president or board chairman when the presentation is to be given close to home, and can be fitted in with their busy schedules.

Analysts interviewed by *CW* also agreed on the type of presentation that gets results for a firm. Said Nicholas Crane of Dean Witter & Co. (New York), '58 president of the New York Society of Security Analysts, "Talks before analyst groups should present current business prospects, and leave out company history unless it's pertinent to the presentation."

Analysts also like speakers to be specific, present facts and figures where possible on new products, depth of management, financial standing, dividend policy, research and development, factors affecting sales favorably or adversely, and personnel, Crane said.

Talks should contain new information. Give the analysts a new development, *CW* was told. And make the talk to as many different groups as are interested, another analyst commented. Additional "mileage" can



CW PHOTOS—JIM GAGNON
Merck's Connor follows the rules, shows slides during presentation to security analysts group.



Successful talks feature facts and a good look at the firm's future prospects.

be had by reproducing the talk (complete with the follow-up question and answer period, if possible) for distribution to other groups of analysts and to the firm's management. Added benefit: by providing its management with copies of the talk and analysts' questions, a firm can prime its executive for probing questions from analysts at any time.

"Keep talks short," is another bit of advice offered management. It's suggested that talks be 20-30 minutes long with ample time for questions from the floor. And don't overlook preparation for questions that the talk might encourage. One way to prepare is to have an analyst friend preview the talk, make suggestions, give some idea of what to expect from the floor. Analysts also advise that the chief executive bring along several key managers who can answer questions on specific areas of the company's business.

Special Meetings: Luncheon group and dinner meetings have become quite popular in the New York area as a means of gaining the ear of the financial community. At the dinner meetings two or three company executives talk to the local society following dinner. Sometimes luncheon group meetings are a bit more intimate in that they involve a firm's management and a small group of analysts who are industry specialists, men who specialize in, say, the chemical industry. By far the most popular type of group meeting, however, is the regular luncheon meeting attended by the entire local society.

Process industry executives with experience before analysts groups agree that the analysts are sincere,

hardworking individuals who really want to know what is going on within the companies. For this reason, management has come to know that it must level with analyst groups. As one executive put it, "We have to tell them the truth, the good and the bad."

National Distillers Vice-President John C. Bierwirth told *CW*, "I go before those groups with the intention of telling them something, rather than satisfying their curiosity. I try to visualize what they want."

Said Raymond Snyder, Merck & Co. financial vice-president, "We view an appearance at the analysts' meeting as an opportunity to tell the Merck story to an influential group of people. We don't do this frequently, since there are other important groups to talk to. After all,

we're not out to promote the sale of Merck securities, but to give the analysts factual background from which they can draw their own conclusions about the company's business health."

Dow reports that it has been going before financial analyst groups for a number of years with very favorable results. Said a company spokesman, "They are the people to know, if you're going to get money on favorable terms, but they've got to know about your company."

Further underscoring the high regard placed by CPI executives on financial group contacts is the comment by National Distillers Board Chairman John E. Bierwirth. "We place great value on such contacts. We feel we're reaching an intelligent audience interested in our company. They in turn pass the information along to the public. It's a real privilege."

"It's a mistake, however, not to tell the whole story to those people, to make a canned speech. They expect you to be frank, and they're entitled to know your plans."

Courses for Analysts: Company courses for security analysts have caught on as another means of familiarizing them with a certain industry. So far, such courses have been given in the oil and electronics fields, and beginning next week, Allied Chemical Corp. will offer a five-session course on the chemical industry. About 300 analysts are expected to attend.

The Allied course, planned at the invitation of the education committee of NYSSA, will include history and evaluation of the chemical industry, research, commercial chemical development, chemical manufacturing, transportation, marketing, financing the chemical industry and what's ahead.

Plant tours for analysts, too, have become an increasingly favored plan for CPI companies. In many cases, executive "guides" must be as fully prepared to answer questions as the men who address analyst group meetings.

Good investor relations usually begin with giving inquirers what they want when they want it, in good and bad times. But analysts and executives alike agree that use of group contact for such purposes must be part of a carefully planned, long-range program, particularly if there's a continuing need for new capital.

How to tell your story to financial analysts

Do . . .

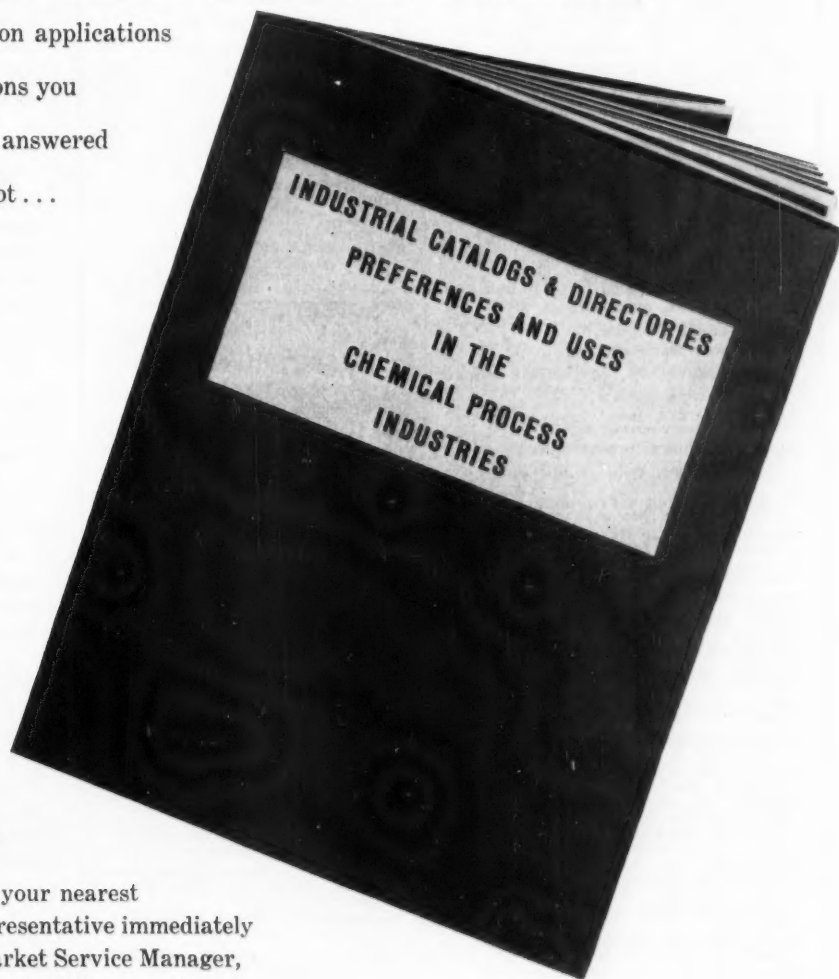
- Make it coincide with new developments
- Discuss new developments
- Use visual aids, souvenirs
- Test your talk on analyst friends
- Prepare for questions from audience
- Provide copies of talk

Don't . . .

- Talk too long—20-30 minutes at most
- Try to be a spellbinder—be concise
- Generalize—be specific
- Wait to be asked—request an audience

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ADVERTISING STAFF

Atlanta 3	Michael Miller, 1301 Rhodes-Haverty Bldg., Jackson 3-6951
Boston 16	Paul F. McPherson, 350 Park Square Building, HUBbard 2-7160
Chicago 11	Alfred D. Becker, Jr., R. J. Clausen, 520 N. Michigan Ave., MOhawk 4-5800
Cleveland 13	H. J. Swager, Duncan C. Stephens, 1164 Illuminating Bldg., 55 Public Square, SUPERior 1-7000
Dallas 1	Gene Holland, Gordon Jones, The Vaughn Bldg., 1712 Commerce St., RIVERSide 7-5117
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Los Angeles 17	Robert Yocom, 1125 West Sixth St., HUNtley 2-5450
New York 36	Knox Armstrong, B. A. Johnson, P. E. McPherson, Charles F. Onasch, L. Charles Todaro, 500 5th Ave., OXFord 5-5959
Philadelphia 3	William B. Hannum, Jr., 6 Penn Center Plaza, LOCust 8-4330
Pittsburgh 22	Duncan C. Stephens, Room 1111 Henry W. Oliver Bldg., EXpress 1-1314
San Francisco 4	William C. Woolston, 68 Post St., DOUGlas 2-4600
St. Louis 8	R. J. Clausen, 3615 Olive St., CONTinental Bldg., JEFFerson 5-4867

ADMINISTRATION

Union for Scientists?

One in five scientists and engineers in 10 recently surveyed corporations—including four chemical companies—favored some form of collective action to improve their income.

This and other significant preliminary findings were released last week by University of Michigan's Bureau of Industrial Relations, which conducted the survey. A complete analysis of the study, which included interviews with more than 250 scientists and engineers, will be published in June under the title "Unorganized Engineers' and Scientists' Opinions of Collective Bargaining for Professionals Like Themselves."

About half of those who favored collective bargaining preferred something along union lines, according to Prof. John Riegel, director of the bureau. The rest, he said, felt that their professional societies could do more collection and distribution of salary data and related information to their members and management personnel.

Opposition Raised: The four out of five scientists and engineers who opposed collective action cited several objections; for example, "It's unnecessary and might even be harmful"; "It would reduce professional productivity and development." About one-third of those opposed felt that collective bargaining of any type would mean that salaries and promotions would not reflect the individual's responsibilities, performance or qualifications.

Other significant points brought out by the survey:

- There are no significant differences between scientists and engineers in attitudes toward collective bargaining.

- There's no firm relationship between ratings of an individual's performance and his attitude toward collective bargaining.

- There's quite a high relationship between how an individual feels about his salary and how he views collective bargaining (those satisfied with their salaries were less likely to be receptive to collective action).

- There are wide differences in attitudes toward collective action among scientists and engineers working for different firms. This appears to be based largely on degree of satis-

faction with salary and treatment by management.

Summing up, Riegel said collective bargaining would enable professionals to exert pressure on their managers for pay increases and benefits. On the other hand, unionization probably could not provide most of the intangible rewards that are vital to these scientists.

LABOR

Wyandotte Contract: Wyandotte Chemicals Corp. and Oil, Chemical & Atomic Workers (AFL-CIO) Local 11267 have agreed on a new two-year contract covering 1,700 hourly employees at the company's Michigan Alkali Division (Wyandotte, Mich.). The contract calls for wage increases now ranging from 7.5¢ to 10¢/hour and an 8¢/hour increase March 1, '60. The 10¢/hour cost-of-living rate in the old contract applies to the new wage rates, but on a new index base.

Antipicketing Law Repealed: Oregon's antipicketing law, designed to stop organizational picketing of intrastate businesses, has been repealed by the state legislature. Parts of the bill, passed in '53, had been declared unconstitutional by the Oregon supreme court.

KEY CHANGES

James M. Gavin to executive vice-president, Arthur D. Little (Cambridge, Mass.).

Clark H. Carter to vice-president and assistant general manager, Walker Laboratories, Inc. (Mt. Vernon, N.Y.), subsidiary of Vick Chemical Co. (New York).

William F. Kremer to medical director, **Felix A. Jehle** to production manager and **Harold Breslow** to administrative assistant to the research director, Denver Chemical Manufacturing Co. (Stamford, Conn.).

M. D. Hassialis to president and **H. E. Roberts** to vice-president, Pacific Uranium Mines Co. (New York).

Howard D. Shorts to manager, Urethane Foam Application Laboratory (Chicago), Witco Chemical Co. (New York).

Tracers

TO THE
CHEMICAL
PROCESS
INDUSTRIES

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Classified Adv. Div. of this publication.
Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 326 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

POSITIONS VACANT

Openings in production, research, and control in a new food processing plant being built by a large Southern, AAA-1 Concern, in New Orleans Area. An opportunity to start in a fast growing industry. In reply, state complete qualifications and salary requirements. P-1176, Chemical Week.

Petrochemical Marketing Research. Opening for chemist or chemical engineer with marketing research or commercial analysis experience. Position is in marketing research section of a leading national company expanding in the petrochemical field. Excellent opportunity for future advancement in development, sales, operation, and administrative fields, as well as in marketing research. Location—Houston, Texas. Salary open, depending upon qualifications. Please send personal resume to: W. W. Clark, Continental Oil Company, P.O. Box 2197, Houston 1, Texas.

Rubber Compounder with Bachelor in Chemistry or Chemical Engineering Degree, 2 to 4 years experience. Write c/o E. A. Gorham, Inland Manufacturing Division, General Motors Corporation, Dayton, Ohio.

POSITIONS WANTED

International Chemical Marketing—Long managing worldwide economic marketing research for sales programming and investments of giant chemical company. Know plastics and industrial, mining, agricultural, organic chemicals. Traveled Europe, L.A. Excellent French, German, Spanish, Japanese. Married. 35, M.A. Seek ground-floor opportunity foreign expansion minded company. Will outline program suited your needs upon request. PW-1294, Chemical Week.

Chemical Sales U.S. Chemistry, M.B.A., married, 30. Seven years broad experience in agricultural, industrial and specialty chemical sales, plus market research and development. Sales covered from national and regional levels. Seeking challenging position where initiative and ability are required. Will relocate. PW-1271, Chemical Week.

SELLING OPPORTUNITY WANTED

Want To Sell In The Growing Export Market? We are fully equipped to handle accounts on an exclusive basis, and invite inquiries from principals in the chemical industry. We are the Import/Export affiliate of Carlisle Chemical Works, Inc., Reading, Ohio, and its division, Advance Solvents & Chemical, New Brunswick, N.J. Our present principals include: Cadet Chemical Corp., Harry T. Campbell Sons Corp., Cowles Chemical Co. (Heavy Chemical Department), John R. MacGregor Lead Co. and Titanium-Zirconium Co. If you are a manufacturer of raw materials or intermediates for the chemical process industries, and are looking for active, experienced representation in the export market, write to: Advance International Ltd., 245 Fifth Avenue, New York 16, N. Y., Telephone: Oregon 9-2663.

MANAGEMENT SERVICE

Clark Microanalytical Laboratory—CH. M. S. Halogen, Fluorine, Oxygen, Alkoxy, Alkoxide, Acetyl, Terminal Methyl, etc. by specialist in organic microchemical analysis. P.O. Box 17, Urbana, Ill., Empire 7-8406.

BUSINESS OPPORTUNITIES

Montmorillonite. We own mining property in Nevada containing approximately 1,000,000 tons of highest quality Montmorillonite Clay. Property has been thoroughly surveyed, drilled and blocked out. Clay has been tested and proved highly efficient for catalyst and filler. We desire to lease or sell property. Kinney Industries, 410 Solano Ave., Los Angeles 12, Calif.

Chemical Specialties and Soap Manufacturer in Hawaii for sale. Will consider affiliation with large chemical manufacturer. Write Box 5321, Honolulu 14, Hawaii for information.

BUSINESS OPPORTUNITY

French Chemical Company possessing Chemical and Plastics Plants offers: Disposal of a plant in France near Mediterranean harbour with railway connection, pipe-line to harbour, storage, workshop, office and lodging facilities, for utilization by an American Company for heavy products or purposes; to an American firm, chemicals manufacture in "joint venture" or in any other form of cooperation; possible diffusion by our Commercial Organization, if necessary. Projects will be confidentially examined. For supplementary information contact: French American Business Services, 750 Third Avenue, 34th Floor, New York 17, N.Y.

FOR SALE

Free Catalog! Fort Pitt Brewery, Pittsburgh—6-page, 2-color illustrated catalog showing all the processing equipment in this plant, which ceased operations in November. Thousands of dollars worth of equipment being sold piecemeal for mere fraction for immediate delivery. Write to: Chas. S. Jacobowitz Corp., 3082 Main St., Buffalo 14, N.Y. Phone: AMherst 2100.

Yeast Dryer For Sale—We have installed a practically new Fischer single drum yeast dryer, 36" dia. x 42" long, with 60 cycle, 220/440 volt, variable speed motor and drive, with a "Frater" pulverizing unit and complete with all accessories as now installed; this equipment is practically "like new". Any reasonable offer will be accepted. Communicate with: Old Reading Brewery, Inc., 9th and Laurel Streets, Reading, Penna.

Oliver Rotary Vacuum Filter, 8 1/2" dia. x 3' face, T316 SS contact parts, precoat, 25¢ pressure housing, Perry, 1415 N. 6th St., Phila., Pa.

7'6" X 100' Rotary Kilm, 1/2" shell, (3) tires, firing hood, drive, excellent condition, still installed. Perry, 1415 N. 6th St., Phila., Pa.

Packaging Equip.—2 only Model 830 Standard Knapp 6-lane case packers; 1 Standard Knapp Model 429 gluer and compression unit with "Wagner" taper for cartons, like new; approx. 3000 ft. Alvey heavy-duty conveyor, including gravity and floor-to-floor belt conveyors with AC motors, can be purchased in lots of 10 ft. and up. Hartford-Empire unscrambler and rinser for qt. bottles; other late model machinery; available for immediate delivery, priced at tremendous bargain. Write for catalog to: Mr. Frank Kogler, Master Brewer, Fort Pitt Brewery, 16th and Mary St., Sharpsburg, Pittsburgh, Pa. Inspection invited.

Reactor T347 S.S. New 4000 gal. jktd. 150# int. press. ASME. Used good cond. 1500 gal. Faudrier glass lined agit. jktd. Reactor 50# int. press. 90# jkt. press. 15 HP KP motor. Located southwest. FS-1097, Chemical Week.

Tanks—For Sale, largest inventory of glass-lined tanks anywhere. Write for free listings, no obligation, immediate delivery, priced half of new. What do you need? Chas. S. Jacobowitz Corp., 3082 Main St., Buffalo 14, N.Y.

FOR SALE OR LEASE

Property For Sale Or Lease In Norwalk, Conn. Ideal for manufacturing, warehousing, etc. Industrial or business site, over an acre, on route 1A, with bldg., railroad siding and plenty of parking space. Main bldg. has 14,000 ft. total floor area—9,200 on 1st floor, Kelvin Engineering. 135 Front St., New York 5. Whitehall 4-9149.

CHEMICALS WANTED

Acids Surplus Wanted—Chemicals, Pharmaceu-ticals, Oils, Plasticizers, Resins, Dyes, Solvents, Pigments, Etc. Chemical Service Corporation, 96-02 Beaver Street, New York 5, N. Y. MA 9070-2-6970.

WANTED/FOR SALE

This Tracer Section can be used whenever you are looking for or offering Equipment, Plants, Supplies, Chemicals, Opportunities, Special Services. The rates are low—just call or write Classified Advertising Division, Chemical Week, P.O. Box 12, N. Y. 36, N. Y., Longacre 4-3000.

Chemical

Week

BUSINESS BENCHMARKS

1959 OUTPUT INDEX

1958

1959 PRICE INDEX

1958

MARCH 28, 1959

WEEKLY BUSINESS INDICATORS

Chemical Week output index (1947-1949=100)
Chemical Week wholesale price index (1947=100)
Stock price index (11 firms, Standard & Poor's)
Steel ingot output (thousand tons)
Electric power (million kilowatt-hours)
Crude oil and condensate (daily av., thousand bbls.)

Latest Week

Preceding Week

Year Ago

201.6	201.2	184.5
112.1	112.0	110.9
53.55	53.57	39.53
2,610	2,604	1,417
12,945	12,972	11,793
7,213	7,199	6,328

MONTHLY INDICATORS—Production (1947-49=100)

All manufacturing
Nondurable goods manufacturing
Durable goods manufacturing
Chemicals and allied product
Industrial chemicals
Petroleum and coal products

Latest Month

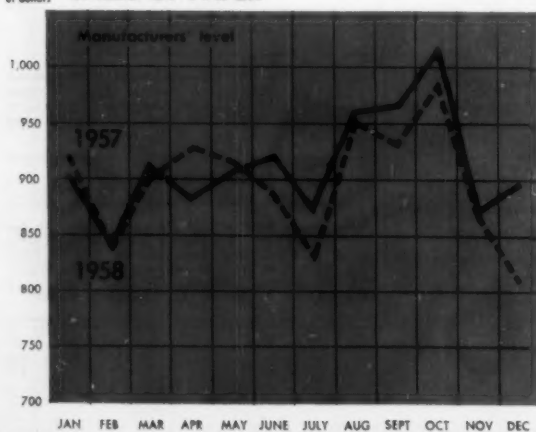
Preceding Month

Year Ago

148	144	133
138	135	126
157	153	139
200	197	180
219	216	190
147	146	130

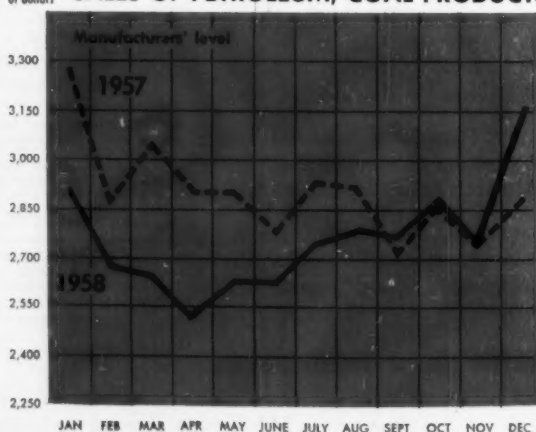
millions of dollars

SALES OF PAPER



millions of dollars

SALES OF PETROLEUM, COAL PRODUCTS



airborne silica it's white magic!

a pinch of **CAB-O-SIL®** works

white magic in pharmaceuticals, cosmetics

White magic? A pinch of Cab-o-sil acts as a free-flowing agent in one pharmaceutical product, an inert binder in another, a crystal-clear jelling agent in a third!

This amazing versatility stems from Cab-o-sil's absolutely unique combination of properties, which include exceptional purity (99.7%) . . . enormous surface area (200 m²/gm.) . . . unprecedented ease of dispersion . . . freedom from moisture . . . and a specific refractive index of 1.55.

And this versatility explains why new uses for Cab-o-sil, the airborne silica, are being uncovered every day. Not only in pharmaceuticals, but in rubber, paint, plastics, paper, and countless other products looking for a plus.



USES:

- Thixotropic, thickening, jelling agent — lubricating oils, greases, polyester resins, plastisols, plastigels, organosols
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5. toothpaste formulations, as a thixotropic and thickening agent
6. pharmaceutical emulsions, internally, as a thickening and stabilizing agent
7. pharmaceutical powders, internally, as a free-flowing agent
8. manufacturing pharmaceutical tablets, as an inert binder
9. pharmaceutical jellies, as a jelling agent
10. pharmaceutical colloidal dispersions, internally, as a thickening and suspending agent
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12. tablet coatings, internally, to add hydrophilic qualities and promote uniformity

*Send for copy of F.D.A. report

AN IMPORTANT MESSAGE

To Sulfuric Acid Users with Waste Disposal Problems

If handling and disposal of large quantities of sulfuric waste materials presents a problem for you—here's the answer:

13 General Chemical plants equipped to handle spent sulfuric!

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These plants provide unmatched experience, service and facilities to customers interested in recovery of spent acid. The service and performance of these plants are certain. Behind them stand the resources and experience of Allied Chemical's General Chemical Division, the nation's primary producer of sulfuric acid, and pioneer in recovery of sulfuric waste products.

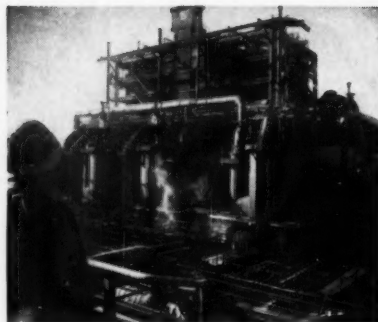
Our experience and facilities are at your service. For further information, write or phone our nearest sales office.



GENERAL CHEMICAL DIVISION

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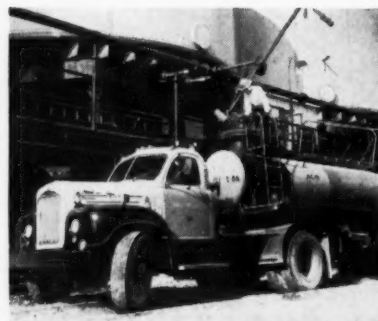
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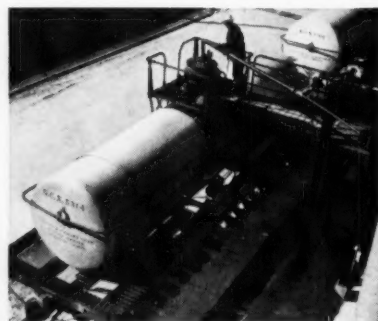
Typical of General Chemical's modern sulfuric acid facilities is our Delaware Works. A part of this plant is seen above.



One of General Chemical's fleet of large coastal barges for low-cost transportation of spent and virgin sulfuric acid. If your plant is near a coastal waterway consult us about possible savings.



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